Railway Age Gazette

PUBLISHED EVERY FRIDAY AND DAILY EIGHT TIMES IN JUNE, BY THE
SIMMONS-BOARDMAN PUBLISHING COMPANY,
WOOLWORTH BUILDING, NEW YORK.

CHICAGO: Transportation Bldg. CLEVELAND: Citizens' Bldg.
LONDON: Queen Anne's Chambers, Westminster.

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Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free:

United States and Mexico.....$5.00
Canada 6.00
Foreign Countries (excepting daily editions)..... 8.00
Single Copies .....15 cents each

Engineering and Maintenance of Way Edition and four Maintenance of Way Convention Daily issues, North America, $1.00; foreign, $2.00.

Entered at the Post Office at New York, N. Y., as mail matter of the second class.

WE GUARANTEE, that of this issue 8,200 copies were printed; that of those 8,200 copies, 6,607 were mailed to regular paid subscribers and 345 were provided for counter and news companies' sales; that the total copies printed this year to date were 353,359—an average of 8,618 copies a week.

VOLUME 55. OCTOBER 10, 1913. NUMBER 15.

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*Illustrated.

REPRESENTATIVE R. B. STEVENS, of New Hampshire, chairman of a sub-committee of the House committee on interstate and foreign commerce, is the author of one of the many bills now being drafted in Washington to cure the ills of railroad management. Whether or not Mr. Stevens fully realizes the crudity and futility of the scores of bills that have been introduced during the past ten years we do not know; but certainly on one point he sees straight. He says: "Congress is too slow-moving a body to handle this question adequately. We are always ten years behind the times. The railroad problem should be solved by a small body of experts who are making a life study of it, rather than by 435 members of Congress who know nothing about the subject technically. Fifty bills are now pending in Congress on this subject. The way to deal with the problem is to turn the whole question over to the commission, with power to act when occasion demands." It might have been added that the commission itself is nearly ten years behind the times in some of these matters. It recommended the general use of the block system in December, 1903; but it has not yet stirred Congress to take action. It had the power to investigate accidents in 1910; but even now, September, 1913, its recommendations lack definiteness, and in some cases are injudicious. Mr. McChord has investigated three train accidents in Connecticut; but his last report says that not until next December will the commission be ready to propose anything specific. And it is to be hoped that Congressman Stevens is more intelligent than are some congressmen in the use of the term "small body of experts." The seven lawyers and publicists constituting the commission do not pretend to call themselves a body of experts in railroad operation, though some congressmen seem to assume that they do. The Block Signal Board recommended that a body of real experts, like the British Board of Trade, be established, but the commission refused to endorse the recommendation. In boiler inspection, and in valuation of railway property, the commission has carried out the "expert" idea with some degree of wisdom; but the notion that congressmen and politicians, rather than cold and scientific engineers, should decide all important questions seems still to have far too much influence in Washington.

TWO features were particularly noticeable at the recent conference of the apprentice instructors of the New York Central & Hudson River. One was that less and less attention is being given the study of mechanical drawing and more and more to the making of rough sketches, such as are often required in shop work, and in the reading of working drawings and blue prints. What is needed is the development of skilled mechanics, and not draftsmen. If any of the boys show promise of developing along engineering lines, then they can find opportunity for further study outside of the apprentice schoolroom, and possibly with the aid of the railway company. This is as should be. The other tendency, while, though it is not new and has been in course of development ever since the modern apprenticeship system was established on the New York Central, is of even greater importance. It is a more vivid realization of the fact that the individual characteristics of each one of the boys must be carefully studied, and that the development along moral lines is of just as much importance to the company as the progress in skill and knowledge of the craft. H. S. Rauch, apprentice instructor at the Avis, Pa., shops, brought out clearly that each apprentice must be given close individual attention and study in order that he may be assigned to that class of work for which he is best fitted, else he will not be happy and cannot do his best work. He must also be given a broad training, that he may develop into a loyal employee and good citizen. Last, but not least, the attempt must be made to develop his character with a view to moral cleanliness, honesty, sobriety and sincerity. This may seem to smack too much of the ideal, but it is possible of accomplishment, and the best apprentices are to be found at those shops where this ideal is most nearly approached.

"WE did not find as much trouble getting the stokers in full operation as we did either the air brake apparatus or the superheater." This is the statement of a motive power officer who had received 100 very heavy Mikado type locomotives from the builders which were equipped with stokers and superheaters. All of the stokers gave 100 per cent. service the first trip over the road and maintained this record practically unbroken thereafter. In view of the length of time that the stoker has been a commercial proposition, this is really a wonderful performance. Investigation shows, however, that this is not the only instance of the

kind, as the same record has been made on other roads that have received a smaller number of new stoker locomotives. While this absence of trouble at the start is very satisfying, the reliability which the machines have shown later in regular service is even more so. Records covering a large number of locomotives for a considerable period show that the average cost of maintenance is but one-half cent per locomotive mile, a figure which the most ardent advocate of stokers would hardly have dared to suggest a year or so ago. One master mechanic who has a number of stoker engines under his jurisdiction writes that so far as trouble is concerned he would not know that he had a stoker locomotive on the division. What a condition of this kind means to the railroad can be easily understood. Recently an entirely new design of stoker was applied to a large locomotive and from the first trip and during the past three months' service not a single shovel of coal has been put in the firebox by hand, although the engine is in heavy freight service. This indicates that the stoker manufacturers have fully familiarized themselves with the conditions they have to meet and credit is due them for a record that has never been made by any locomotive device of similar importance in an equal length of time. There are at the present time nearly 1,000 locomotive stokers in operation in this country.

THE Canadian Northern has had under construction during the year about 2,500 miles of road, including the Port Arthur-Montreal connection and the Edmonton-Vancouver extension which will complete the transcontinental line from Quebec to Vancouver. This work is being pushed at maximum speed, as indicated by the fact that during 1912 the company completed an average of over 1½ miles of new line per day. It is expected to have the entire main line ready for operation before the end of next year. Although the Canadian Northern is not to be compared in point of age or financial backing with its two principal competitors in the Canadian field, it has been developed in small units by careful financing on small capital until it will shortly be in position to compete actively for its share of the transcontinental business. The dominion and provincial governments encourage in a substantial manner the building of new railways which will help in the development of the vast agricultural and mineral resources of the country, but this help does not extend to the securing of well located and adequate terminal facilities which are so essential in handling business. The manner in which the Canadian Northern has overcome the indifference of the people of Montreal and the opposition of the other roads, is described in an article on the Montreal terminal published elsewhere in this issue. A large passenger and freight terminal in the very center of Montreal was necessary if the new line was to compete on an even basis with the older roads. Montreal is the chief city of the dominion in many respects and during the busiest season of the year it is the eastern seaport for the company's Atlantic steamers which will deliver a large amount of business to the road. The city was already well served by trunk lines, one of which is 50 years older than the new company, and was provided with well located passenger and freight terminals. The natural entrances to the city were all occupied, and to parallel the existing lines would have meant a long section of unprofitable line, so the bold plan of tunneling under Mt. Royal to locate a passenger station in the heart of the business district and a freight station along the river front was adopted. The cost of this terminal is expected to reach at least $20,000,000 and in order to meet a part of this large investment, the company is developing a suburban district back of the mountain. The tunnel will provide a short connection with the city and as the entire terminal is to be electrified it is expected to establish a service that will be very attractive to suburban residents. The boldness of the promoters in undertaking such a vast project, their ingenuity in planning to recoup a portion of the expense by this development and their skill in carrying out the work as indicated by the fact that a world's tunneling record has already been broken, are attracting wide attention among railway men. Such projects are only undertaken under such a stress of competition as exists in the Canadian field at present.

THE TRESPASS PROBLEM.

THE need of a national law prohibiting trespassing on railway tracks was strongly emphasized in an article by Marcus A. Dow, general safety agent of the New York Central Lines, in the *Outlook* of September 27, 1913. Several railways have made strenuous efforts to get public authorities interested in co-operating with them to reduce this evil, but with more or less indifferent results. In some states—New York in particular—ample legislation has been effected, but the magistrates have been slow in punishing offenders, partly because of the expense to the community when they are found guilty and imprisoned because of inability to pay the fines imposed, partly because of ignorance as to the exact provisions of the law, and partly also in some cases because the magistrates felt that the public should be more thoroughly warned against committing the offense before punishment was imposed.

Statistics of death and injuries to trespassers indicate that roughly only 25 per cent. of the trespassers are car riders and that the other 75 per cent. are track walkers. Of this 75 per cent., F. V. Whiting, general claims attorney of the New York Central Lines, has shown that over 75 per cent. are responsible citizens living in the vicinity of the road, or women and children. The larger portion of the track walkers are, therefore, not in the hobo class, and a fine imposed upon these for trespassing on railway property would do much to discourage the guilty ones from repeating the offense and would have a salutary effect on their neighbors. With this in mind, the New York Central has assigned one of its representatives to the task of visiting and conferring with the magistrates in order to secure their co-operation, and also to get in touch with the local newspapers, which, by their comments, may prove of great assistance in educating and warning the public about the dangers of trespassing. This representative has been engaged in the work since the first of August and thus far has devoted his efforts to those parts of the line where accidents to trespassers are most frequent.

In connection with this the railroad has renewed its efforts in warning the trespassers by the posting of suitable notices, and has been more active in policing the right of way. The statement has been made by one who has been intimately associated with those who are most active in trying to discourage trespassing, that if all of the states had adequate and uniform trespass laws, or if there was a national law prohibiting trespassing on railway property, and if a campaign of education was waged among the magistrates, public authorities, and the public generally, and the railways would do their part in apprehending and arresting trespassers, the evil could be practically eliminated in this country inside of six months.

Mr. Dow, in urging the enactment of a national law, says: "We are the only civilized nation in the world that has no national law prohibiting, under the penalty of a penitentiary sentence, trespassing on railway tracks, and in those few states where there are such laws, there is a woeful neglect to enforce them. The total number of railway employees and passengers killed on our railways each year is less than the total number of trespassers killed; and if it is worth while for the railways to spend millions of dollars to install and improve safety devices to prevent the killing of their own employees and passengers, why, I would ask, is it not worth while that some effective legislative action be taken by our government to protect and save the lives of more than 5,000 trespassers annually, and the

limbs of many thousands more? It would not cost the nation a penny, and the saving to it of a vast economic loss, not only in the lives of its citizens, but in the reduction of its number of helpless cripples, would be inestimable."

FITNESS FIRST; SENIORITY AFTERWARDS.

THE conservative press very generally condemns the locomotive engineers of the New Haven road for starting up their strike machinery simply because of disagreement concerning what seems to be only a technicality; because the company has announced new rules making fitness the first qualification, experience the second and seniority third, instead of seniority first, fitness second and experience nowhere. The issue is quite clear, even to the lay mind. Strikes depend on public sympathy and, with the case stated as it has been stated, it is easy to predict the opinion of all fair minded persons. It needs no argument to prove that a young man may be better fitted than an old one for a given critical task. But the case has not been properly stated; the newspaper discussion has not brought out the real issue. If the public is to be the jury the jurymen must dig deeper for the essential facts. The enginemen do not claim that seniority shall be absolutely the governing factor, and they feel aggrieved at being misrepresented. Of a number of editorial utterances, that of the *Providence Journal* may be taken as typical. This article says:

> The New Haven engineers who are said to be taking a "strike vote" on the new rules which promise better discipline, evidently are unaware of the widespread disapproval of their position on the question of safety. The operating officers have been censured by state and federal boards for accepting rules which may give the preference to inexperienced men, and for failure to hold engineers and trainmen to strict accountability when orders are disregarded. It also is stated that a vice-president and the general manager, in the opinion of the engineers, should be discharged because they were especially conspicuous in the work of revising the rules and insisted that engineers who passed danger signals must not expect any help from the grievance committee. The duty of the New Haven management is to submit to no dictation on questions of discipline. Public safety is all important, and any proposition which weakens the authority of the superintendent should be rejected. The rule of seniority, cherished by the engineers, is bad in that it may compel the operating officers to select the men least fitted for positions of responsibility. An engineer of five-years' experience may be more competent than one who has run locomotives 8 or 10 years. *The judgment of the superintendent as to qualifications should be unfettered.*

The enginemen's side may be seen from the following extract from an editorial in the *Locomotive Engineers' Monthly Journal:*

> Seniority means experience, and experience means safety. One of the greatest wreck calamities in New England was caused by a violation of this rule, when a young engineer who had never been in passenger service was ordered with his freight engine to couple on ahead of a passenger train engine. There is no rule in our contractual relations with railroad companies more justified than the rule that the oldest in service shall have the preference in assigning men to important runs. They have served the companies longest and had the greatest experience. If a senior man is lacking in ability to perform the service *there is nothing to prevent the railway officials from establishing that fact* and calling the next senior man to fill the place.

The whole issue is embraced in the two passages which we have italicized. Mr. Bardo's purpose, evidently, is to introduce a rule which shall *shift the burden of proof.* The *Providence Journal* and other influential papers approve this change. Under the old rule seniority decides each case unless the superintendent can prove that seniority should not be the deciding factor. The superintendent is not absolutely prevented from taking the best men for the most important runs, but he is fettered. Under the new rule he is not held to such a strict requirement. The claim of the engineers is that the superintendent will be unfair. There have been superintendents on many roads who were unfair in such matters.

In the police department of New York City the spirit of revolt against the authority of the superintendent has gone so far that discharged policemen are allowed to go to the higher courts for vindication and reinstatement! The brotherhoods would be glad to introduce conditions like that into the railroad service. Such a situation is intolerable. Delays and difficulties in administering discipline are responsible for half our troubles. Sometimes the superintendent himself is to blame; but the remedy for the misdoings of an unfair superintendent must be found in some other direction than that of suspending the regular course of business, perhaps a dozen times a month, while there is held a judicial inquiry—occupying perhaps a dozen men a dozen days—or else railroad operation will have to be handed over to the military authorities, as it was in France on the occasion of the recent strike in that country.

The superintendent who assigns runners and manages trains must have absolute authority, in that sphere, howsoever troublesome or costly may be the subsequent measures necessary to correct any injustice which may result from allowing that authority. The ideal superintendent is one who, like a well known officer that could be named, supplemented a decision dismissing an engineman by this declaration to the grievance committee: "Whether I hold my position seven minutes, or seventy years, this decision will stand!" Of course, to maintain that attitude a superintendent must be not only strong, but just. He must be a large size man.

When Mr. Whaley, some months ago, assumed his present position at the head of the operating department of the New Haven road, the New York reporters went to him at once for an interview. As he was taking an important position they quite naturally wanted an interview of respectable length. As the New Haven company had been loudly criticized for inefficient management they put forward, as their main point, a request for an outline of the principles on which Mr. Whaley proposed to manage the discipline of his subordinates. They got their answer in four words—"Be fair and firm." The only amplification of this that they could extort was that "if you are fair, then you can be firm." This was not very satisfactory to a reporter who had been ordered to get a half column; but if Mr. Whaley can carry out this policy there can be no doubt that it will be satisfactory to the public. On a road like the New Haven, with its scores of trainmasters and road foremen, and its hundreds of enginemen, the task is no easy one.

ST. LOUIS SOUTHWESTERN.

THE changes from year to year in the tonnage of the various products carried by the St. Louis Southwestern is typical of the growth of the country served. The St. Louis Southwestern runs from St. Louis down the east side of the Mississippi river to Thebes, there crosses the river, running down through southeastern Missouri, eastern and southern Arkansas, and spreading out in Texas reaches Dallas, Fort Worth and Waco. Thus, the "Cotton Belt" taps the "black land" cotton belt of Texas and also gets into the timber country of east Texas and eastern Arkansas.

Of the total tonnage carried on the St. Louis Southwestern in 1913, 23 per cent. was products of agriculture, of which cotton and cottonseed products made up a little less than half; 39 per cent., products of forests; 25 per cent., manufactures and miscellaneous; 2.54 per cent., livestock and animal products, and 10.68 per cent., products of mines. The tonnage of products of agriculture increased by 2 per cent. in 1913 over 1912; products of forests, 10 per cent.; manufactures, 12 per cent.; livestock and animal products, 23 per cent.; and products of mines, 15 per cent. With its comparatively large tonnage of timber the St. Louis Southwestern gets a northbound haul which is impotrant in helping to give it a larger average trainload. In 1913 the total tonnage of all products carried was 3,726,000 tons, of which 54.23 per cent. was northbound and 45.77 per cent. southbound. As the timber is cleared off, farms are being established, and although the growth in the tonnage of products of agriculture was but 2.11 per cent. in 1913, the growth of the *diversity of farming* is indicated by an increase of 117 per cent. in the tonnage of oats; 41 per cent. in the tonnage of grain other than rice, corn, oats

and wheat; 33 per cent. in the tonnage of tobacco, and 66 per cent. in the tonnage of fruit and vegetables. Cotton is not a particularly important commodity on the St. Louis Southwestern except in so far as a good cotton crop means a prosperous territory demanding increased manufactured products, etc. The great bulk of the cotton grown in central and eastern Texas moves to the seaboard at Galveston or other Gulf ports and on this traffic the St. Louis Southwestern can get but a comparatively short haul.

In the annual report for the fiscal year ended June 30, 1913, there is nothing to indicate that it would be found advisable to reduce the preferred dividend (which action has, however, been taken by the directors), unless it be the mention of the fact that the United States Supreme Court had upheld the rate reductions in Missouri and in Arkansas. Last year the St. Louis Southwestern, operating 1,609 miles, earned $4,081,000, as against $3,623,000 the year before; and after the payment of expenses, taxes and interest there was $1,886,000 net available for dividends, as against $1,618,000 available for dividends at the end of 1912. Since dividends call for a little less than a million dollars, the company showed a comfortable surplus in both 1913 and 1912. Expenses, of course, were higher last year than the year before, as would be expected with a larger business



The St. Louis Southwestern.

handled; but the operating ratio was 69.31 in 1913, as compared with 69.92 in 1912, and by far the largest part of the increase in expenses was in maintenance of way. The increase on this account was $422,000, or 28.60 per cent., and the total in 1913 was $1,899,000. Thus, the company spent $1,180 per mile. The standard on the main track of the St. Louis Southwestern is 75-lb. rail, ballasted with gravel and sand, although the company has about 189 miles of rock ballast and is at present ballasting some of its Texas lines with burnt clay.

The total ton mileage in 1913 was 871,986,000, an increase over 1912 of 4.34 per cent.; and the total passenger mileage was 100,170,000, an increase over 1912 of 14.22 per cent. Transportation expenses amounted to $4,039,000 in 1913, an increase of 7.89 per cent. The average haul of freight was 234 miles in 1913 and 245 miles in 1912; and of passengers, 39 miles in 1913 and 37 miles in 1912. The receipts per ton per mile were 1.13 cents in 1913 and 1.07 cents in 1912; and the receipts per passenger per mile were 2.61 cents in 1913 and 2.62 cents in 1912. Of the total 1,609 miles, 145 miles are in Missouri and 565 miles in Arkansas, so that presumably the reduction in revenue, especially in passenger revenue, from the working of the state commission's rate reduction orders, will be quite considerable. To offset this there is the rapid growth of population and of prosperity in the territory served and the increased efficiency of the effectiveness of the transportation plant. In 1913 the average train load on the St. Louis Southwestern, exclusive of Texas, was 461 tons, as against 447 tons in 1912, and on the Texas lines, 215 tons, as against 211 tons; so that the average train load on the entire system was 349 tons in 1913, as against 341 tons in 1912.

The following table shows the ratio of each class of expenses to total operating revenues:

	1913.	1912.
Maintenance of way	14.29	12.27
Maintenance of equipment	16.69	18.04
Traffic expenses	3.83	3.98
Transportation expenses	30.38	31.09
General expenses	4.12	4.54
Total	69.31	69.92

The only additional capital securities which were sold by the St. Louis Southwestern in 1913 were $2,049,000 first terminal and unifying mortgage bonds, of which $508,000 was used to retire outstanding securities, leaving a net increase of $1,541,000, with a net property investment increase during the year of $1,938,000.

The following table shows the principal figures for operation in 1913, as compared with 1912:

	1913.	1912.
Average mileage operated	1,609	1,548
Freight revenue	$9,864,490	$8,971,114
Passenger revenue	2,618,176	2,300,986
Total operating revenues	13,296,950	12,042,543
Maintenance of way and structures	1,899,484	1,477,069
Maintenance of equipment	2,219,390	2,172,269
Traffic expenses	508,894	479,154
Transportation expenses	4,039,413	3,744,143
General expenses	548,616	546,780
Total operating expenses	9,215,797	8,419,415
Taxes	468,697	458,512
Operating income	3,599,816	3,150,072
Gross income	4,644,141	4,047,915
Net income	1,886,191	1,617,619
Dividends	994,682	994,682
Surplus	891,509	622,937

CHESAPEAKE & OHIO.

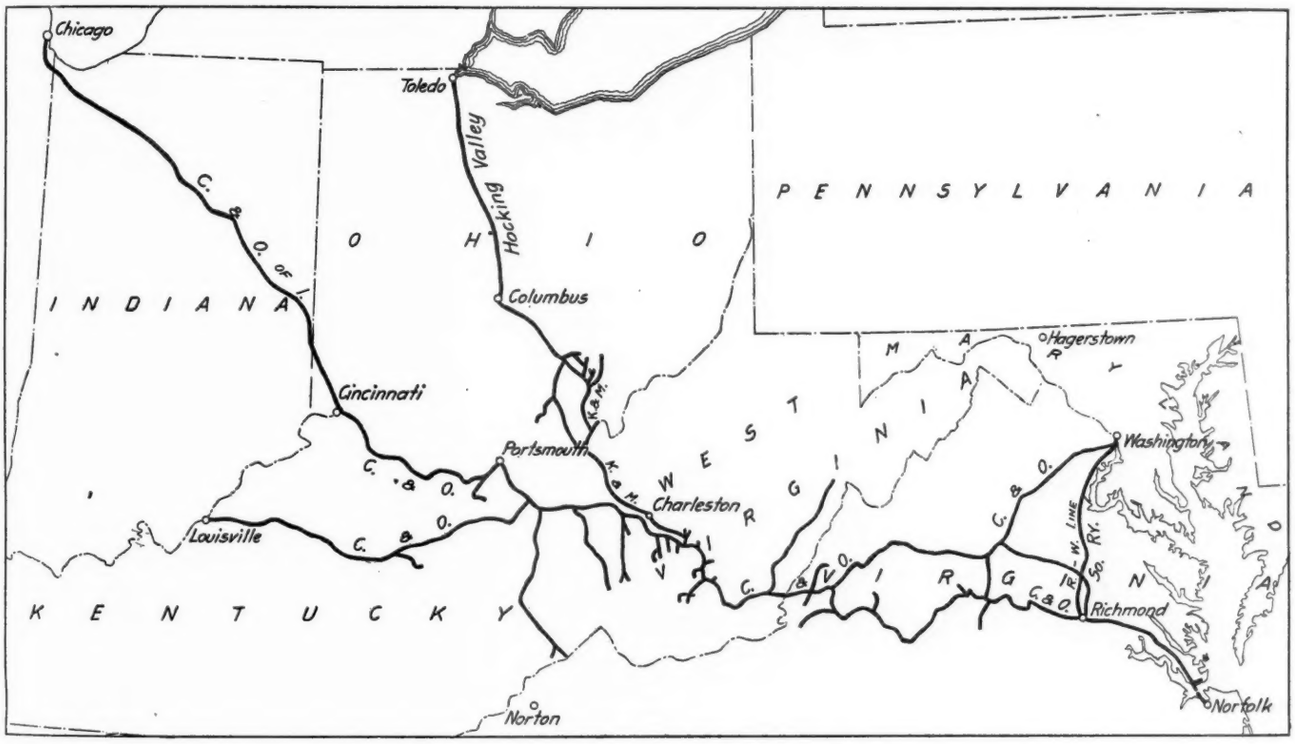
THE Chesapeake & Ohio is one of the three or four roads that have shown in the last few years the most remarkable increase in average train load. In 1910, before the C. & O. had acquired its Chicago line, the average revenue train load was 701 tons and the total train load was 733 tons. In 1913 the revenue train load was 843 tons and the total train load 901 tons; and this included and was averaged down by the train load on the Chicago line. The train load on the Chicago line in 1911 was 325 tons for revenue freight and 347 tons for all freight; and while it is undoubtedly better than that now, it may easily be seen that an apparent increase of 20 per cent. in revenue train load and 23 per cent. in total train load represents a very much greater actual increase in train load on the C. & O. proper. Despite the increase in train load, however, expenses have increased out of proportion to increased revenues largely because transportation expenses *per train mile* have increased to a quite extraordinary degree. Nineteen ten was the banner year for the C. & O., and in that year the property earned $6,290,000 net income after the payment of fixed charges, or about 10 per cent. on its stock. In 1913 the company earned $3,299,000 net, or about 5.25 per cent. on its stock. The operation ratio in 1910 was 60.6 per cent. and in 1913 69.7 per cent.

To form an intelligent opinion as to the probable future earning power of the property we must separate the causes which have acted to make the 1913 showing less favorable than the 1910 showing into those that are temporary, those that are within the power of the management to eliminate, and those that are beyond the present power of the management to remedy.

The Chesapeake & Ohio is now a double track line from Newport News, Va., to Cincinnati, Ohio, and a single track line from Cincinnati to Chicago, having also a single track line from Ashland to Louisville, Ky. The company owns the majority of the stock of the Hocking Valley and a half interest in the Kanawha & Michigan. The double-track line between Cincin-

nati and tidewater is a low grade line built and maintained with the best modern standards. It runs through the Kanawha, the New river and taps the Kentucky coal fields and its grades from the coal fields to tidewater are better than those of either the Virginian or the Norfolk & Western. Between 60 and 70 per cent. of the total tonnage of the C. & O. lines, including the Chicago line but excluding the Hocking Valley, is bituminous coal. About one-third of the coal carried moves east to tidewater and the other two-thirds west, to be delivered to the Kanawha & Michigan for the Hocking Valley at Gauley; to the Cincinnati, Hamilton & Dayton at Kenova; to the Cleveland, Cincinnati, Chicago & St. Louis at Cincinnati; to the Chicago line at Cincinnati, and to other connections at Cincinnati. The control of the Hocking Valley was bought in 1910, and a little later the Chicago line was bought, but the Chicago line is only now getting in such shape as to permit of profitable operation. In 1911 the Virginian began operation and since then has been a competitor of the Chesapeake & Ohio for tidewater coal. In is commented upon elsewhere; but to get its coal on to the Hocking Valley the C. & O. has to get it over the Kanawha & Michigan, which was probably pretty badly congested.

The floods, and the worst of the congestion on connecting lines, were temporary conditions which are not likely to occur again in the near future. The congestion on the Kanawha & Michigan will probably not very materially improve, although it is possible that the Chesapeake & Ohio may find some way of delivering a considerably larger volume of coal to its Hocking Valley line. The competition of the Virginian will grow stronger rather than weaker and will in all probability only be partially offset by increased production of coal. On the other hand, more and more coal is being mined from the Kentucky fields, and both general freight business and coal business for the territory between Cincinnati and Chicago is materially improving, along with the improvement in physical condition and in operaton of the Chicago line. In 1913 freight tonnage other than coal and coke amounted to 8,811,000 tons, as compared



The Chesapeake & Ohio and the Hocking Valley.

1913 the total tonnage of coal carried on the C. & O. lines was 16,363,000 tons, as compared with 15,725,000 tons carried in 1910. The 1913 tonnage of coal and coke was less by 9.5 per cent. than the tonnage in 1912.

During 1913 there were strikes in the West Virginia coal fields; there were, of course, the unprecedented floods, and the added competition of the Virginian. The floods interrupted through traffic on the C. & O. only ten days, but, of course, affected expenses for both transportation and maintenance over a much longer period. More serious, however, even than the effect of the floods on the operation of the C. & O. itself was the inability of connections due to flood damage to accept deliveries from the C. & O. The Cincinnati, Hamilton & Dayton is not in particularly good physical condition, and was seriously affected by the floods. It, therefore, was not able during a very considerable part of the last six months to take anywhere near the tonnage which the C. & O. was able to deliver to it. The C. C. C. & St. L. was also damaged by floods and naturally, of course, had to take care of its own freight and New York Central freight first, so that it undoubtedly had to refuse quite a considerable amount of Chesapeake & Ohio coal. The Hocking Valley is in fine physical condition, and its showing in 1913 with 7,633,000 tons in 1910; and the 1913 business was an increase of 9.2 per cent. over the 1912 business.

While, of course, coal business is very profitable if a high ton mile rate can be obtained, because it is so comparatively cheap to handle, the C. & O. gets but 3.15 mills per ton per mile for its coal, while it gets 6.05 mills per ton per mile for freight other than coal. It would appear, therefore, that if the Chicago line both offers a market for C. & O. coal and lends itself to materially increasing the other freight business of the C. & O., the outlook for gross earnings is materially better than would be indicated by the increase of slightly over 1 per cent. in freight revenue in 1913 as compared with 1912. In this connection attention may properly be called to the increase in passenger revenue. In 1913 passenger revenue amounted to $5,858,000, which is more by 6.4 per cent. than in 1912.

There remains the question as to whether or not the increase in expenses shown since 1910 is temporary or is beyond the control of the management.

Maintenance expenses on the Chesapeake & Ohio have for a number of years been on a liberal scale. Maintenance of way in 1913 cost $4,343,000, or $1,873 per mile of road. This compares with $3,982,000 spent in 1912 and $4,142,000 spent in 1911;

the 1910 figure is, of course, not comparable because it does not include the Chicago line. Maintenance of equipment cost $7,275,000 in 1913, $6,724,000 in 1912 and $6,199,000 in 1911. The expenditures for repairs per unit of equipment for the three years is as follows:

	1913.	1912.	1911.
Per locomotive	$2,624	$2,700	$2,479
Per passenger train car	844	839	803
Per freight train car	70	65	63

Transportation expenses in 1912 totaled $11,381,000, comparing with $10,503,000 in 1912 and $10,044,000 in 1911; the 1910 total figures are not comparable because they do not include the Chicago line.

The large gain made in the past three years in train loading has already been mentioned, and total transportation expenses per unit of service (ton miles and passenger miles added) were 1.34 mills in 1910 and 1.63 in 1913. With such a very large gain in train load, however, there ought to be a much better result in transportation costs per unit per mile; and the explanation, of course, is that transportation expenses per train mile have so largely increased since 1910. In that year total transportation expenses per train mile, excluding mixed train miles, were 65.4 cents; in 1913 they were 86.5 cents. This is an increase of 32 per cent. While, of course, wages have shown a larger increase than fuel costs, even fuel costs appear to have gone up disproportionately when measured on a train mile basis. Thus the cost of fuel for road locomotives per train mile in 1913 was 11.1 cents, and in 1910 9.1 cents, an increase of about 22 per cent. Enginemen's and trainmen's wages in road service were 24.6 cents in 1913 and 19.0 cents in 1910, an increase of 29 per cent. We might surmise that the showing in train load had been effected by largely increased double heading and helper mileage, but this was not the fact. Total locomotive miles in freight service was 114 per cent. of freight train mileage in 1913 and 113 per cent. in 1910; and locomotive mileage in passenger service was 109 per cent. of passenger train mileage in 1913 and 105 per cent. in 1910. This is a comparatively small increase in freight helper mileage, and not a very large increase in passenger helper mileage.

The most noticeable increase in transportation expenses per train mile was in wages of yard enginemen and yard crews. In the aggregate of these items there was an increase of 50 per cent. between 1912 and 1913.

It is not an uncommon experience for a new management to make an excellent showing in increased train load, but have transportation expenses increase out of proportion, even so as to entirely offset the saving effected by larger train loads. During the process of putting new methods into operation and installing heavier power there are naturally delays in yard service, overtime for both yard and road crews, sometimes friction between the men and their officers, and all of those little problems which aggregate so large and which can only be overcome by time and patience. After the train load approximates the figure which the management has decided it should be, then attention can be turned to reducing transportation expenses per train mile, and one after another of these expenses can be brought down into line. This is the problem which the Chesapeake & Ohio apparently still has to face, the successful solution of which, however, should result not only in regaining the ground that has been lost, but in a very material advance in effectiveness of operation over what was the starting point.

The Chesapeake & Ohio directors, after the close of the fiscal year, decided to reduce the annual dividend rate from 5 to 4 per cent. The company earned only slightly over its full 5 per cent. in the fiscal year ended June 30, 1913, and not having any very large surplus to the credit of profit and loss (the surplus at the end of 1913 was $2,515,000), conservatism even at the expense of the stockholder appeared to be entirely justified.

There is one statement in the 1913 annual report of the Chesapeake & Ohio that, so far as we know, is unique among the reports of American railroads in clearness and intelligibility in regard to capital expenditures. This statement shows the total par value of each issue of capital securities sold in the four years ended June 30, 1913, the total being $69,436,000, which realized for the company $65,761,475. During this time the total par value of capital securities paid for or bought was $18,076,000, which securities cost the C. & O. $18,399,696, leaving a total of $47,361,779 capital raised during the four years through the sale of securities. During these four years the C. & O. bought stock of other companies with a total par value of $20,414,900, paying therefor $20,645,046; and bonds (the C. & O. of Indiana first mortgage 5's) with a face value of $6,589,000 at a cost of $5,311,700; and the properties of three small roads at a cost of $4,192,869. In addition the company spent for extensions and betterments $14,080,052, $1,637,883 for equipment, and $11,166,743 for equipment through the C. & O. Equipment Corporation. This is a total capital expenditure of $57,034,294, against which capital securities of a par value of $51,360,000 were sold. The difference between $51,360,000 and $47,361,779, which is the amount realized by the company, is the sum of the premiums which the company had to pay for securities that it retired and the discount which it had to allow on its securities sold. The Chesapeake & Ohio would be a rather poor example for those who continue to talk about stock watering or overcapitalization.

The following table shows the principal figures for operation in 1913 as compared with 1912:

	1913.	1912.
Average mileage operated	2,319	2,263
Freight revenue	$27,549,696	$27,261,475
Passenger revenue	5,858,138	5,505,536
Total operating revenues	35,085,278	34,289,870
Maint. of way and structures	4,342,745	3,981,646
Maint. of equipment	7,275,439	6,724,460
Traffic expenses	669,016	636,967
Transportation expenses	11,380,998	10,503,415
General expenses	783,362	789,193
Total operating expenses	24,451,560	22,835,681
Taxes	1,375,863	1,014,220
Operating income	9,257,855	10,639,969
Gross income	11,483,392	12,448,532
Net income	3,298,503	4,274,206
Dividends	3,139,080	3,139,628
Surplus	159,423	1,134,579

HOCKING VALLEY.

THE Hocking Valley operates but 352 miles of road, of which but 47 is double tracked; but it earns more than $22,000 per mile of road and handled in the fiscal year ended June 30, 1913, despite the floods, 4,136,000 ton miles per mile and 150,000 passenger miles per mile. This was an increase over 1912 of 5.5 per cent. in freight density, and about 1 per cent. in passenger density. Despite floods and very materially higher amounts spent for maintenance of equipment there was net income, after the payment of expenses, taxes and all fixed charges, of $1,916,000 in 1913, as compared with $1,831,000 in 1912.

Of the $11,000,000 stock of the Hocking Valley, $8,825,000 is owned by the Chesapeake & Ohio and the Chesapeake & Ohio stockholders' equity in the earnings, present and potential, of the Hocking Valley amounts to no inconsiderable sum. The Hocking Valley stock is deposited under the Chesapeake & Ohio first lien and improvement mortgage.

The Hocking Valley carried 11,179,000 tons of freight in 1913, of which 79.78 per cent. was products of mines, and of which total freight 47.35 per cent. originated on the Hocking Valley and 52.65 per cent. was received from connections. There are only a few roads in the entire country that have the freight density on single track that the Hocking Valley has. The Bald Eagle Valley line of the Pennsylvania is one, the eastern end of the main line of the Wheeling & Lake Erie is another; but even so, the Hocking Valley is not being operated to its fullest capacity.

In 1912 the average revenue train load was 852 tons, and this remarkably good train loading was bettered in 1913 by 16 per cent., making the revenue train load 988 tons and the total train load, including company freight, 1,023 tons. The tonnage per locomotive, including company freight, was 862 tons. With ton mileage greater by 5.6 per cent., transportation expenses amounted to but $2,332,000, or about 4 per cent. more than in

1912. The saving during normal operation must have been larger than indicated by these figures, since, of course, for a part of the year the road was being operated under the abnormally expensive conditions created by the floods.

The following table shows the proportion of each class of expenses to total operating revenues:

	1913.	1912.
Maintenance of way	10.0	11.7
Maintenance of equipment	20.4	16.3
Traffic expenses	1.4	1.4
Transportation expenses	29.8	30.7
General expenses	2.2	2.6
Total expenses	63.8	62.7

Maintenance of equipment in 1913 cost $1,595,000, an increase over 1912 of $403,000. There was spent $2,254 for repairs per locomotive in 1913, as against $1,844 in 1912; $536 for repairs of passenger train cars, as against $516 in 1912; and $55 for repairs of freight train cars, as against $35 in 1912. Four locomotives and 2,348 freight cars were retired during the year. This policy of retiring light equipment as rapidly as possible is presumably responsible for the heavy increases shown in cost of maintenance of equipment. The very heavy train load is at least presumptive evidence that the Hocking Valley power is kept in thoroughly good repair, and average car loading of 36.3 tons presumably indicates that the greater part of the light equipment has already been eliminated. The average tonnage capacity of all freight cars in service in 1913 was 40.4 tons, as against 38.1 tons in 1912. At the end of the year but 2.8 per cent. of the freight train and work car equipment was undergoing or awaiting heavy repairs. The company will receive early in the present fiscal year 1,000 additional gondola cars of 57 tons capacity.

During the year $860,000 was spent for additions and betterments. Fifteen receiving tracks were built and a water station and treating plant was installed at Parsons yard near Columbus, Ohio. The company also has under construction a new coal track and terminal yard at Toledo. The coal handling facilities at Toledo are just about equal to the present demand on them. The new dock will increase the coal handling facilities to such an extent as to easily take care of the peak of the load for a number of years to come, even if the Hocking Valley shows larger gains in coal traffic than it has on an average in the previous eight or ten years. No capital securities were sold during the year and $316,000 equipment trusts were retired. At the end of the year the company had on hand $1,529,000 cash, with total working assets of $2,787,000, no loans and bills payable, and working liabilities of $1,846,000. The profit and loss surplus is carried on the balance sheet at $9,152,000.

The following table shows the principal figures for operation in the fiscal year ended June 30, 1913, as compared with 1912:

	1913.	1912.
Average mileage operated	352	351
Freight revenue	$6,365,735	$5,958,009
Passenger revenue	929,991	874,596
Total operating revenues	7,817,644	7,303,679
Maint. of way and structures	781,109	853,403
Maint. of equipment	1,595,266	1,192,191
Traffic expenses	106,384	99,621
Transportation expenses	2,332,475	2,245,657
General expenses	168,609	188,170
Total operating expenses	4,983,843	4,579,042
Taxes	477,900	414,188
Operating income	2,355,901	2,310,449
Gross income	3,030,574	2,902,149
Net income	1,916,404	1,830,836
Dividends	1,264,943	770,000
Surplus	651,461	1,060,836

NEW BOOKS.

Wright on Quantities. By G. Alexander Wright. Size 6 in. x 9 in., 16 pages, paper cover. Published by the author, at 571 California street, San Francisco, Cal. **Price, 50 cents.**

Mr. Wright's discussion of methods of estimating the cost of building construction is a reprint of an address given before the General Contractors' Association at San Francisco on April 10, 1913. It is a plea for a better system of cost estimating, and includes references to the methods used in England and the modifications necessary to apply such methods in this country.

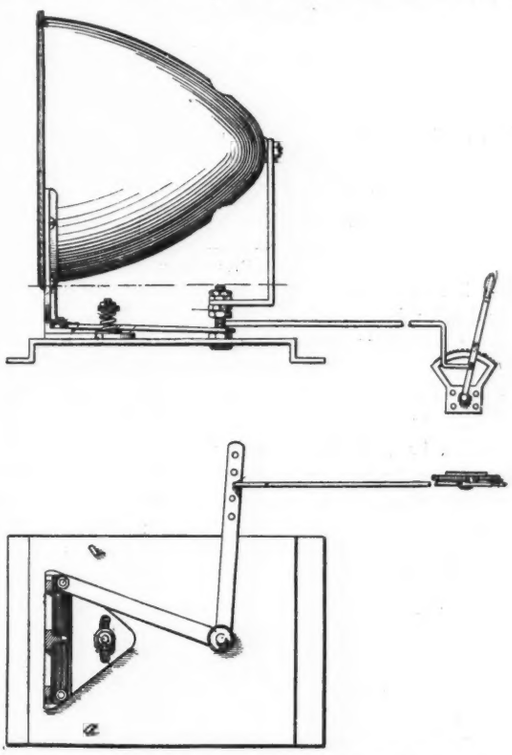
Letters to the Editor.

A DEFLECTABLE HEADLIGHT.

Denison, Tex., May 17, 1913.

To the Editor of the Railway Age Gazette:

In reply to a letter from W. F. Schaphorst published in the *Railway Age Gazette* of February 28, in regard to a deflectable headlight, I would state that the Missouri, Kansas & Texas has had such a headlight in operation for some time. When the Railroad Commission of Texas ordered all roads in this State to provide high power headlights we had a great deal of trouble in erecting the electric headlight housings so that when the headlight was properly focused the beam of light would strike the rails on straight track. To overcome this difficulty I invented an adjustable sliding base on which is mounted the front of the reflector so that by a slight adjustment of the reflector the desired result is obtained. All locomotives on the M. K. & T. have this



Deflectable Reflector for Electric Headlights.

adjustment. Later I improved this arrangement so that this adjustment may be controlled from the cab, thereby changing the ordinary electric headlight into a searchlight under the control of the engineer. This improvement consists of the addition of a bell crank attached to the front reflector support and pivoted on a stud placed directly under the carbon. To the other end of the bell crank is attached a rod which is fastened to a small lever in the cab. With this arrangement the effectiveness of the headlight is in no way impaired, as the deflector turns about its focal axis. Several of this style of deflector were placed in service on the M. K. & T. more than two years ago, and were very popular with the Texas engineers. The results obtained were very good and as far as I know gave no trouble, which I attribute to the simplicity of construction.

The advantages claimed for this headlight are as follows:

First: The headlight is under the control of the engineer at all times.

Second: An engineer can look around a curve at a level crossing when the locomotive is 500 or 1,000 ft. from the point of the curve to see if it is in the clear, or in entering yards on a

curve the engineer can see if the main line is clear of switch engines, box cars or cabooses.

Third: The very fact of sweeping the light around a curve (where there is a level crossing) would notify anybody well in advance that there was a locomotive coming.

Fourth: In clearing up wrecks, building bridges, driving piles, etc., the headlights can be diverted where they will do the most good.

Fifth: The headlight may be kept in the center of straight track.

Sixth: When two locomotives are approaching each other on double track, the engineers need not be blinded by the opposing lights, as one can divert his light to one side and the other on the opposite side as they pass.

Seventh: The only movable part is the reflector which is the lightest part; the arc lamp, wires, housing, etc., all remain stationary. The reflector turns around the carbon as a center; therefore the focus or clear spot of light is maintained in all positions.

Eighth: In case an engineer thinks he gets a phantom light from a switch stand he may divert the headlight off the switch stand and read the true signal.

This deflector is intended to be used by the engineer to examine dangerous spots on the road, such as level crossings on curves, curves going into yards, etc., also to keep his headlight true with straight track, and not to be used on every crook and turn of the track, which would be impracticable. J. R. Pratt.

FREIGHT CAR EARNINGS.

Pittsburgh, Pa., September 18, 1913.

To the Editor of the Railway Age Gazette:

I read with interest your claim, in the issue of the 5th instant, that if demurrage is regarded as a charge for the rendering of a service, $1 per day is inadequate, and your implication that the charge should be $2.50 per day, instead. If you are right, then the charge for a car which has been held for a year should be $912.50, although the carrier would get the car back at the end of the year in as good condition, except for a little depreciation, as when it went to the industry, and would not, if the car lay idle at a point where it did not interfere with spotting, have been put to a dollar of expense outside of a little bookkeeping. If the car was worth $700, a fair average value, when it went into the industry and the depreciation was $100, which is a very liberal estimate; much too high, in fact, for an idle car, the return to the carrier would be over 115 per cent. per annum on the capital invested. Even at a dollar per day the return would be over 37 per cent., while at 45 cents per day, the amount the railroads charge each other, it would be over 9 per cent.

The fact is that average earnings of $2.50 per freight car per day, on which your based your claim, are not the earnings of the cars alone but are the gross earnings per day of all the instrumentalities of freight transportation: locomotives, cars, roadway, bridges, tunnels, tracks, buildings, and the thousands of other things which directly or indirectly contribute to the transportation of freight, expressed in terms of cars. These earnings might just as correctly be expressed in other terms, such as earnings per mile, earnings per locomotive, earnings per railroad spike, or per any of the units of transportation between which and the gross earnings it is desired to indicate the relationship; but when so expressed the result is not the earnings of a mile of track, the earnings of a locomotive, or the earnings of a railroad spike. The relationship in different cases of the gross earnings to the number of cars involved varies greatly with the kinds and conditions of service, and for any given case can only be approximated by an intelligent study of the conditions in place of a sweeping generalization.

Henry S. Prichard.

[Our correspondent has, possibly unwittingly, fully answered his own query. It is perfectly true that $2.50 per freight car per day represents the earning of a freight car with the use of its share of the rest of the plant, but the rest of the plant is no more necessary to the freight car earnings than are the freight cars to the rest of the plant. In other words, when a shipper ties up a freight car he ties up the use which that car might make of the entire plant. A mile of track at the end of a branch line might cost ten to twenty times as much as a freight car, but the loss of its use for a certain length of time to the company might not amount to by any means as much as would the loss of the use of a freight car.—Editor.]

GIVING AGENTS DETAILED INFORMATION ABOUT FREIGHT CARS.

White Plains, N. Y., October 6, 1913.

To the Editor of the Railway Age Gazette:

In your issue of October 3, General Agent Hale asks that some of the men who are closer to the work of getting more movement of freight cars, give him something on the question.

It is a fact that the "men on the road" can and do accomplish a great deal toward the prompt movement of either loaded or empty freight cars, and it has been my experience that their efforts can be greatly facilitated by the one who is handling the car situation in the division office. In this office the despatchers do this work, and the following method has kept almost every car moving under the proper load, or moving to a point where it will be loaded in the direction of home.

I believe that one of the most useful bits of knowledge the car distributor can have is a thorough knowledge of the commodities received and despatched from the stations on his division, and exactly what kind of car is most suitable for both. With this foundation, take the car orders as early as possible, so as to get rid of surplus cars and fill other orders by the first train. With a little coaching I have found that nearly all agents will get enough information from the shippers to enable them to order cars of the correct size, capacity and condition; and the coaching can readily be accomplished by mailing the previous month's *Equipment Register* or *Line Clearance* to one agent or another as results warrant.

It is the smaller stations and the outlying spurs which need daily attention from the agent, and he will give this if he is reasonably sure that the cars on his tracks are being watched for use at other points. The larger yards seem to take care of themselves, to a certain extent, because cars must be moved out to make room for those coming in. A few cars may be overlooked on some isolated track, or blocked behind some cripples, but the trainmaster seldom overlooks them. A couple of cars moved promptly from each of the smaller stations, either loaded or for loading, will soon make the general result felt on the entire system. W. E. Brown,

Despatcher, New York Central & Hudson River.

Railway from Madrid to Seville to Be Shortened.—The growing necessity of shortening the route between Madrid, Spain, and Seville, has taken form in a government decree which authorized the minister of public works at Madrid to invite tenders for construction of a 75-mile railway from Puertollano to Cordoba. The government offers to assist in the work by granting a subsidy of $10,800, and by a returnable loan of $1,400 for each mile of line constructed. The builders are to reimburse the government for the total amount of the returnable loan in 20 fixed instalments, of which the first payment will be due two years after the completion of the entire line, the second payment the year following this, and so on. The successful bidder for this contract must make a deposit equivalent to 1 per cent. of the tender and plan approved. The plan to be preferred will unite with the most favorable technical conditions of construction the most direct route and the greatest possibilities for speed. In case no tender is accepted, government engineers will draw up specifications for the construction of the railway.

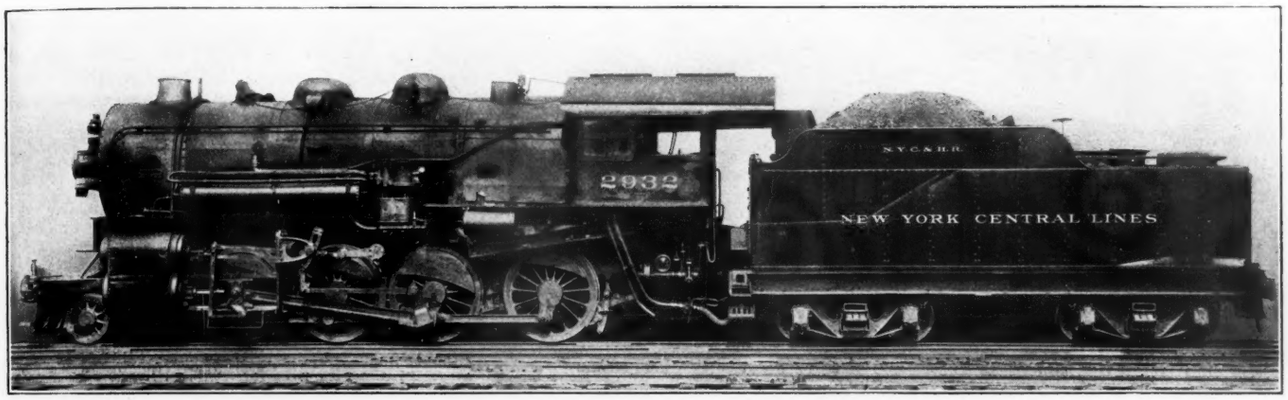
THE STANDARD LOCOMOTIVE STOKER.

Absence of Apparatus in the Cab and Noiseless Operation Are Prominent Features of This New Locomotive Stoker.

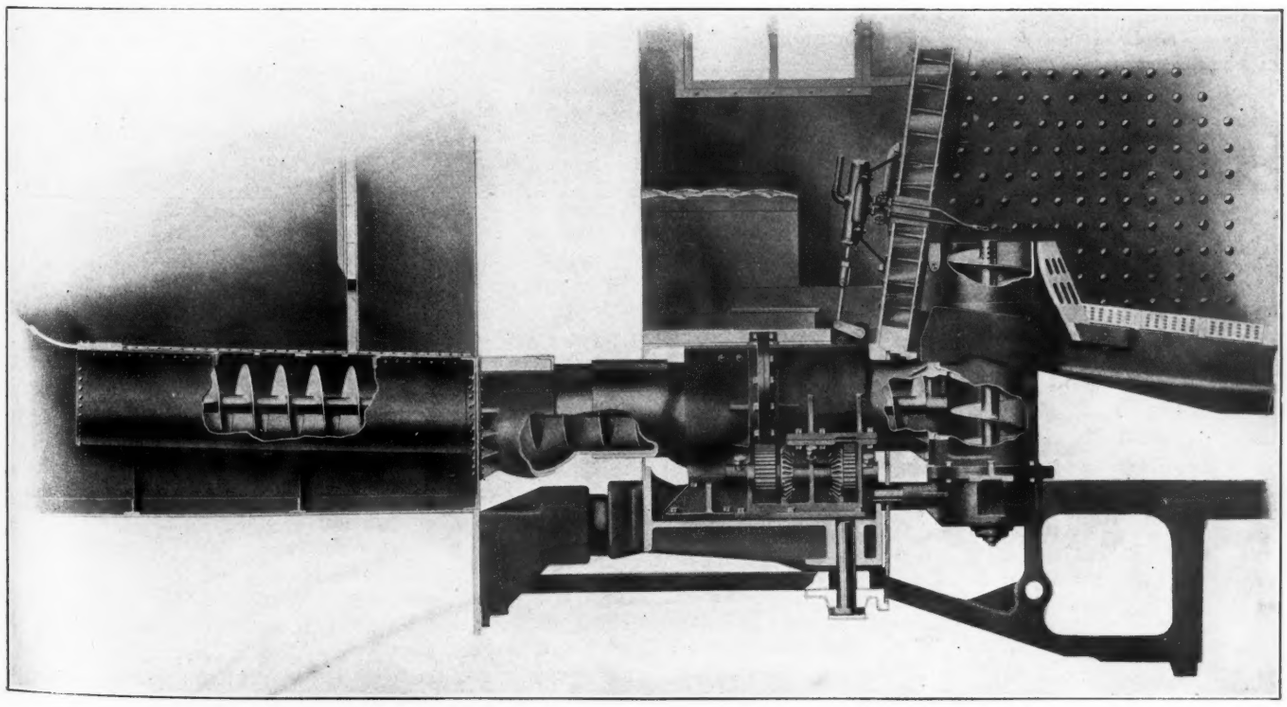
Continuous 100 per cent. service from the day it was first put in operation over three months ago, is the record that has been made by the Standard locomotive stoker on a large consolidation locomotive on the New York Central. During the last two months this locomotive has been in regular road service, taking its turn with the others in its class. In this time it has made over 6,000 miles with full tonnage trains. An inspector has been on the locomotive at all times and readings of the steam pressure were recorded every five minutes. The average pressure for the whole period is nearly 198 lbs., with the pops set at 200 lbs. No test or record has been made of the coal consumption, but observation indicates that the stoker will consume from one and one-half to two tons less coal over the division than is used in hand firing. The engines burn about 28 tons when hand fired. The average speed of the train is practically the same as when fired by hand. The only alteration in the adjustment of the locomotive itself that has been caused by the application of the stoker, has been the enlargement of the nozzle from 4⅞ in. to 5⅛ in.

All of this indicates a most remarkable success for the first application of a new locomotive stoker. During the first month's work the locomotive was kept in pusher service and several minor troubles occurred which were promptly corrected; and since the locomotive has been in road service practically no difficulties of importance have arisen in connection with the stoker's operation or maintenance.

A Standard stoker of this type was on exhibition at the Atlantic City convention last June and a brief description of it appeared in the June 14 issue of the *Daily Railway Age Gazette*. Since that time some changes have been made, particularly in connection with the part of the stoker that projects above the grate on the interior of the firebox. This section is now surrounded by a sloping conical-shaped grate



Class G 6 F Consolidation Locomotive, New York Central, Fitted with a Standard Stoker.

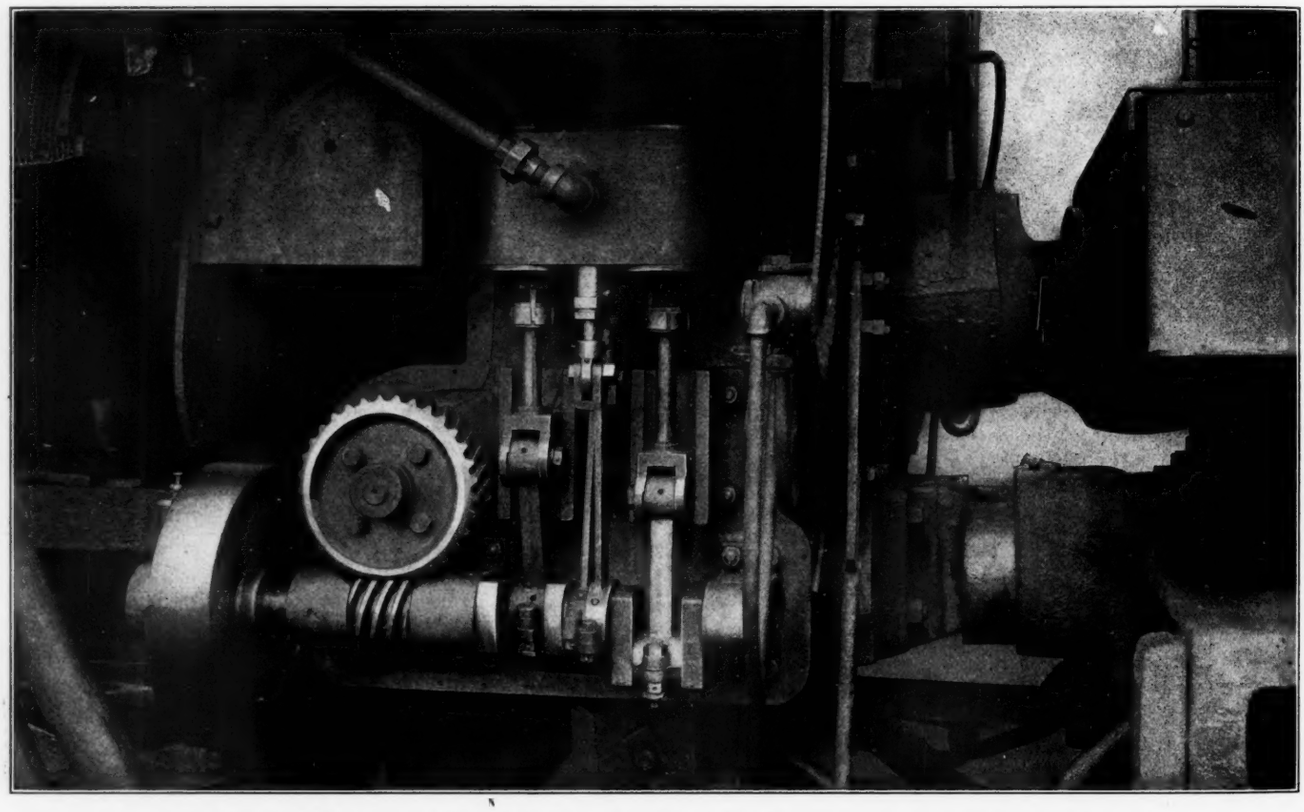


The Standard Stoker; Showing Arrangement of Conveyor, Jets and Grates.

which reaches to the top of the discharge pipe and insures it against overheating. Changes have also been made in the arrangement of the tender, although the new tender had not yet been put in service.

This stoker is of the overfeed or scatter type and employs a screw conveyor for carrying the coal from the tender to a point under the back mud ring, and below the level of the cab deck. This conveyor discharges to and feeds a vertical screw conveyor which carries the coal upward and discharges it at a point about 12 in. above the level of the grate, midway of the width of the firebox and close against the back head. Intermittent steam jets are used for distributing from this point to the various parts of the firebox.

A small two-cylinder vertical reciprocating engine, secured to the locomotive frame under the cab on the left side, drives the stoker. The shaft of this engine carries a heavy flywheel and a worm which meshes with the gear secured to the end of the horizontal shaft extending across the frame under the cab.



The Small Engine on the Left Side Operates the Stoker Conveyor and the Jet Control Valve.

This horizontal shaft carries a bevel gear on its other end which meshes with two bevel gears, one of which drives the horizontal conveyor and the other the vertical conveyor. All of these gears are enclosed and thoroughly lubricated. The horizontal conveyor consists of three parts connected by universal joints. The forward section is in a trough rigidly fastened to the foot plate of the locomotive and to the vertical conveyor casing. The second part is enclosed in a ball joint section of the trough which is arranged in two parts, having a slip joint between them and a ball joint on one end of each. This arrangement is clearly shown in the illustration. The third section is in a trough under the tender deck which is open at the top except for a wrought iron grating with openings six inches square, which in turn is covered by short sections of solid plate that can be moved to allow the entrance of the coal. It will be seen that this arrangement allows perfect flexibility between the locomotive and the tender and by using the two universal joints in the conveyor shaft, combined with a square section forming a slip joint at one end of the intermediate connection, no binding or unusual stress will be put on any part. Experience has shown that this construction works perfectly in every particular. The coal passes freely and all of the joints operate with ease.

The vertical screw conveyor is carried in a cast iron casing that is supported from the engine frame and from the mud ring and projects about 12 in. above the level of the grate. The shaft has a ball thrust bearing at the bottom and is arranged for complete lubrication at that point. For the protection of the upper end of this casing a specially shaped grate has been designed which includes the top ring of the casing and slopes diagonally downward on either side and in front in a conical shape, allowing the air to circulate freely around the upper end of the casing and keep it cool. Provision is also made for the admission of steam over the top of casing by a special jet, controlled from the cab, for keeping the conveyor cool when the locomotive has been standing for some length of time.

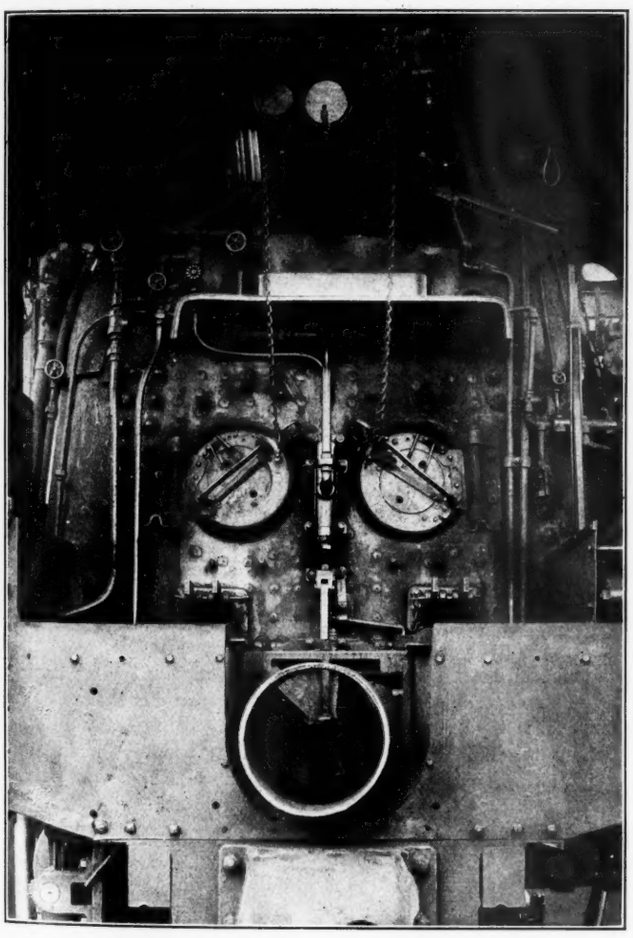
The only part of the apparatus that is in the cab is a jet controlling valve which occupies a vertical position against the back head and between the fire doors, as is shown in the illustration. This valve has a reciprocating motion obtained from an eccentric on the main horizontal shaft. From it are carried the four ¾-in. pipes leading to the distributing jets. These pass through an opening in the back head and terminate just back of the center of the vertical conveyor. Each of them carries a nozzle pointed in different directions and one has two side openings for projecting the coal directly into the back corners. Each of these pipes is provided with a globe valve on the outside of the boiler, by which the pressure in it can be controlled independently. The jet distributing valve opens and closes the ports leading to these various pipes intermittently. As each is opened it projects a small amount of coal in a fan-shaped form over the section of the firebox toward which it is directed.

In the cab there is also located the control valve for the speed of the conveyor engine, the valve in the steam pipe leading to

the jet distributing valve and a gage on each of these lines, as well as the lubricator for the small engine.

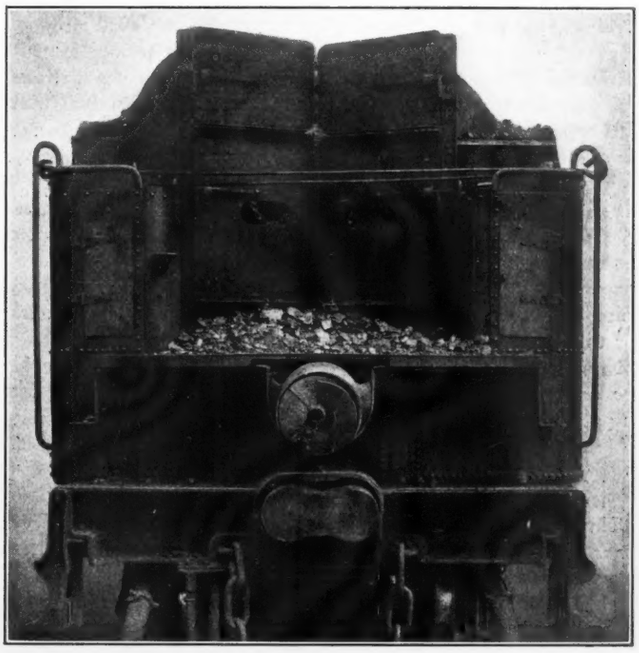
In the operation of the stoker the amount of coal delivered to the firebox is controlled by the speed at which the stoker engine is operated, which in turn depends on the amount of steam pressure it is given. The distribution is controlled by an adjustment of the amount of pressure and the direction of each of the nozzles and this, when once properly set, seldom needs alteration. Close watch can be kept of the condition of the fire, since the fire doors are entirely unobstructed, and if it is found necessary, the rake can be introduced to level off the fire. Openings are provided in the cab deck through which any of the operating parts of the stoker can be reached from above. All bearings can be lubricated in this way and immediate attention given to any part that causes trouble.

On a recent trip which the writer made to observe the operation of this stoker the locomotive left the East Buffalo yards with a train of somewhat over 3,000 tons, in 71 cars. An average speed of approximately 20 miles per hour was maintained with this load. The coal used was of good quality and at no time was there any difficulty in maintaining full steam pressure The amount of smoke made was approximately the same as would occur with the best skilled hand firing. At no time was there heavy, dense, black smoke and the color which would correspond to No. 3 on the Ringleman chart was seen only occasionally. The amount of cinders discharged was remarkably small, in fact, it was with difficulty that it could be discovered that any were being thrown out of the stack. With the firedoor closed there was practically no noise at all from the stoker, in fact, it was necessary to watch a moving part to be assured that the machine was actually in operation. The condition of the fire at all times was under full control of the fireman and the only occasions when it was necessary to use the rake were due to an unwise change in one of the distributing valves, which threw more coal to certain points than was actually necessary. When properly adjusted, the fire was maintained in a level condition.



View in the Cab of a Locomotive Fitted with a Standard Stoker.

The locomotive to which this stoker is applied has the following dimensions. It is provided with a brick arch but has no superheater.



View of the Tender Showing the Location of the Conveyor.

Cylinders, diameter and stroke	23 in. x 32 in.
Diameter of driving wheels	63 in.
Steam pressure	200 lbs.
Tractive effort	47,200 lbs.
Diameter boiler, front end	80 in.
No. and diameter of tubes	444, 2 in.
Length of tubes	15 ft. ½ in.
Heating surface, tubes	3,497 sq. ft.
Heating surface, firebox	230 sq. ft.
Heating surface, total	3,727 sq. ft.
Grate area	56.5 sq. ft.
Weight on drivers	211,000 lbs.
Total weight, locomotive	236,000 lbs.
Tender, coal capacity	12 tons.
Tender, water capacity	7,500 gals.

The Standard stoker is manufactured by the Standard Stoker Company, Grand Central Terminal, New York City.

New Extension for South Africa.—The railway extension from Caledon towards Kykoedy is now in operation as far as the farm Rietkuil. The farmers are already using the line for marketing their grain, large quantities of which have already been stored.

Seville-Malaga Railway, Spain.—There is more than a rumor of the projected construction of a railway direct between Seville and Malaga, which would pass for a long distance through hitherto rather inaccessible country, via Moron and across the Seville-Algeciras railway at a point probably not far from Ronda. Construction of such a railway would greatly facilitate travel between Malaga and Seville, a journey now occupying almost eight hours by the fastest train. It would further tend to promote intercourse between the two cities and sections of country now without easy communication. Resulting increase in travel and in shipment of merchandise along the proposed line will prove the clearest endorsement of its advantages.

HOW THE RAILWAYS HAVE FARED SINCE 1902.

By S. W. DUNNING.

The full Interstate Commerce Commission statistics for the railways of the United States have not yet been published for 1910-11 and 1911-12, but short abstracts of some of the principal data for both of these years have been given out, and by the help of these it is possible to inquire into the general course of traffic, earnings, and the progress of efficiency as shown by the proportion of employees to traffic, gross earnings and profits for the eleven years ending with June, 1912. From 1902 to 1907 there was great activity and great prosperity in railway business. But 1907 was the culminating year, and for the succeeding years the contrast is striking, as the following will show.

First, as to the course of traffic:

From 1902 to 1907 freight traffic increased 50 per cent. (from 157,289 to 236,601 millions of ton-miles), and passenger traffic increased 40½ per cent. (from 19,690 to 27,719 millions of passenger-miles). In very few countries of the world is the gross amount of freight traffic so great as the mere growth of ours for this short period of five years.

Now from 1907 to 1912, an equal period, the growth was 11 per cent. in freight and 19 per cent. in passenger traffic. Let us put the amounts and percentages of growth side by side.

	Growth in millions of		Percentages of growth	
	Ton-miles.	Passenger-miles.	Freight	Passenger.
1902 to 1907	79,312	8,029	50	40½
1907 to 1912	26,355	5,316	11	19

Thus in the earlier period the increase in traffic was *three times as great* in freight as in the later one, and *one-half greater* in passengers.

This is a tremendous change in the rate of growth. Even in the later period it was somewhat greater than the growth of population, and it would be considered fair progress in most countries; but so great a change in the rate of growth gave a shock to the industrial life of the country from which it is now only beginning to recover.

Naturally, between 1902 and 1907, while traffic was growing by leaps and bounds, the railways were compelled to make extraordinary efforts and invest extraordinary sums in order to provide facilities to meet the demands upon them; and everywhere railway managers were using their wits to devise the costly permanent works which would enable them in future years to carry the traffic which was growing at so rapid a rate. Additions to rolling stock and many improvements could be made year by year and were made during the five years of rapid growth. But the more extensive permanent works were only begun then; they have been executed and paid for chiefly since 1907, at a time when traffic had ceased to grow rapidly. Eminent instances are the New York terminals of the Pennsylvania and the New York Central.

The returns of capital invested were first made in the present form in 1907, and comparisons with 1902 have comparatively little value. The additions then were enormous, but greater nominally than really. From 1907 to 1912 the increase was very nearly $2,500,000,000, or 18½ per cent.

Meanwhile, the increase in mileage (the mileage reporting operations) was 12¼ per cent. from 1902 to 1907, and 5½ per cent. from 1907 to 1912. New roads, however, absorb but a small part of the additions to railway capital in these days: it is the improvement of the old ones which swallows the money.

Naturally, the great increase in traffic from 1902 to 1907 made necessary an increase of the army of employees. The number employed increased 40½ per cent., from 1,189,315 to 1,672,074. The last year of this period the number employed on new construction was unusually great. The whole period was one of the substitution of heavy for lighter locomotives and of increasing trainloads; and the efficiency of the men, or, in other words, the economy as shown by the amount of transportation per employee, is not fully shown by taking the numbers for that year. The next year (1907-8) this number was reduced by 213,830, or more than one-eighth. From this latter year to 1912 the increase in the number of employees was more than 18 per cent.

Now in 1907 the number of passenger-miles per man employed was the same as in 1902; the number of ton-miles, 7 per cent. greater. With 40½ per cent. more men the railways managed 40½ per cent. more passenger traffic and 50 per cent. more freight traffic. But in 1912, 18 per cent. more employees were required to handle 13½ per cent. more passenger and 20 per cent. more freight traffic than in 1908—the latter being taken instead of 1907, because of the abnormally large force engaged in new construction in the latter year.

The greater efficiency of the force employed was, of course, due to the improvements made; and the greater efficiency in the later than in the earlier period, to the fact that many improvements begun in the earlier were not completed till the later period.

The effectiveness of the employees in transportation, however, may be a very different thing from their effectiveness in producing earnings and profits. Below is a comparison of gross and net earnings per employee in the three yars, as follows:

	1901-2.	1906-7.	1911-12.
Gross	$1,452	$1,548	$1,664
Net	513	503	445

Thus the gross earnings of the railways per man employed in 1912 were 14½ per cent. greater than in 1902 and 7½ per cent. greater than in 1907; but their *net* earnings in 1912 were 13 per cent. *less* than in 1902 and 11½ per cent. less than in 1907.

These are figures which are worth pondering over. In them railway proprietors, managers and employees, and, not least, legislators, may find food for reflection. They cover two considerable periods: one of extraordinary activity, and another of sudden and great decline followed by comparatively slow growth in business and by a more rapid increase in the cost of doing it.

ITALIAN PASSENGER TRAFFIC.—A recent article in the *Journal des Transports* on the operating results of the Italian State Railways gives some interesting particulars regarding the nature of the passenger business. Compared with the inhabitants of other European countries, the Italians do not as yet seem to have developed the "travel habit" to any very marked extent. According to a series of comparative statistics compiled some years ago, the average number of railway journeys made annually in Italy was only 1.71 per head of the population. This compares with 22.82 in the United Kingdom, 14.26 in Belgium, 12.59 in Switzerland, 9.78 in Germany, 7.96 in France, and 3.55 in Austria. Not only is the average number of journeys small, but the statistics also show that travel is, for the greater part, of the short-distance order, 70 per cent. of the total number of passengers traveling less than 16 miles. This condition is not only disadvantageous as regards railway revenue, but from the economic and social standpoint it is in the highest degree desirable to stimulate the growth of economic relations between the north and south of the country. Politically, this is also of the greatest importance, since the old jealousy between north and south is still far from being extinct, and its embers are from time to time fanned into flame. The commercial and industrial centers being in the north, while the south is almost exclusively given up to agriculture, this antagonism is likely to persist so long as there is no free communication between the two parts of the country. Since the end of 1906 the Railways Administration has developed a policy of stimulating passenger traffic. This has taken the form of establishing a diminishing scale of fares, in which the charges per kilometer are progressively lowered after 100 miles, and of making great increases in the train service. The latter is, in fact, said to be often considerably in excess of actual requirements, which, as in the case of the French state railways, is one of the causes of the constant increase in expenditure. Still, if the Italian railway authorities believe that traffic facilities increase traffic, they have a good deal of favorable precedent on their side.

CANADIAN NORTHERN MONTREAL TERMINAL.

Driving a Tunnel 3.25 Miles Long Under Mount Royal to Reach New Passenger Station in Business District of City.

In building its new transcontinental line, the Canadian Northern was confronted with few engineering problems more difficult than that of securing a satisfactory freight and passenger terminal in the city of Montreal. The location of the city on the lower slopes of Mount Royal, a long ridge about 800 ft. high on an island in the St. Lawrence river, makes any railway approach to the heart of the city difficult, and the fact that the

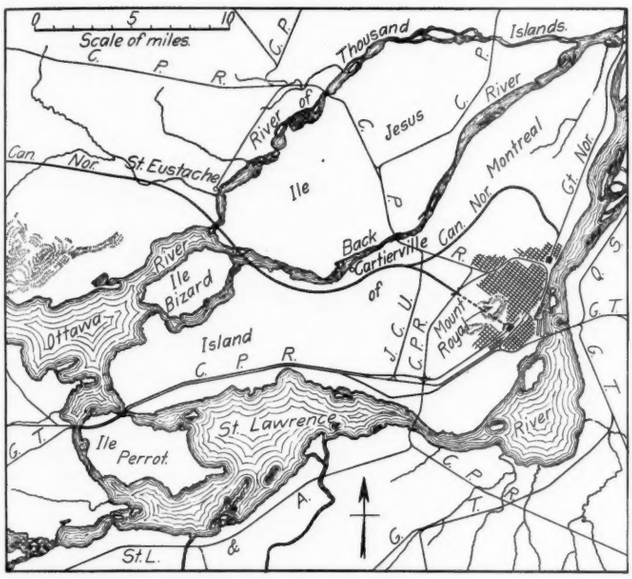


Fig. 1—Montreal and Vicinity, Showing Entrance of New Canadian Northern Line.

Canadian Pacific and the Grand Trunk were already located along the river front, the easiest approach, and owned terminals near the center of the city, greatly complicated the problem for the Canadian Northern. The new line could not parallel either of the old ones, as such a route could only have been built at a high cost and, when completed, would have been productive of little or no traffic for a considerable distance from the city.

LOCATION OF NEW ENTRANCE.

As the Canadian Pacific's line to Ottawa occupies the south bank of the Ottawa river west of Vaudreuil and the Canadian Northern owned a bridge over this river at Hawkesbury, the logical route seemed to be on the north shore of the Ottawa river, making it necessary to cross the Back river, which adjoins the island of Montreal on the north, in order to reach the city. Having crossed to the island the best connection with the existing line, which entered the east end of the city, was secured by skirting the back of the mountain and crossing the ridge at a low elevation with grades considerably lower than the other roads have. This enabled the line to reach the freight yard at Maissonneuve and the harbor commissioners' transfer tracks very easily, providing a good freight terminal, but this had little relation to a satisfactory method of handling passenger traffic.

There are at present four passenger terminals in Montreal. The Grand Trunk Bonaventure station is located in the lower part of the city, being used by all Grand Trunk trains, as well as by those of the Central Vermont, the Delaware & Hudson, the Intercolonial and the Quebec, Montreal & Southern. This station is well located for the business section but is somewhat removed from the residential and shopping districts, and on account of the rather shabby surroundings, is not as popular with passengers taking early morning or late night trains as the Windsor station of the Canadian Pacific, which is not far away, but is on a higher level and is close to the principal hotels and shopping district. The Windsor station has a very attractive entrance from Dominion square, the principal park in the business section. This station is used by all Canadian Pacific trains east and west, except those which serve the province of Quebec exclusively. It is also used by the St. Lawrence & Adirondack and the Rutland divisions of the New York Central. The Quebec trains of the Canadian Pacific enter the Place Viger station, which is also in the lower portion of the city, but is far east in the French quarter. The present station of the Canadian Northern is on Moreau street, which is still further east and is altogether inadequate. All of these stations are essentially dead end, as through passengers on the Grand Trunk are carried

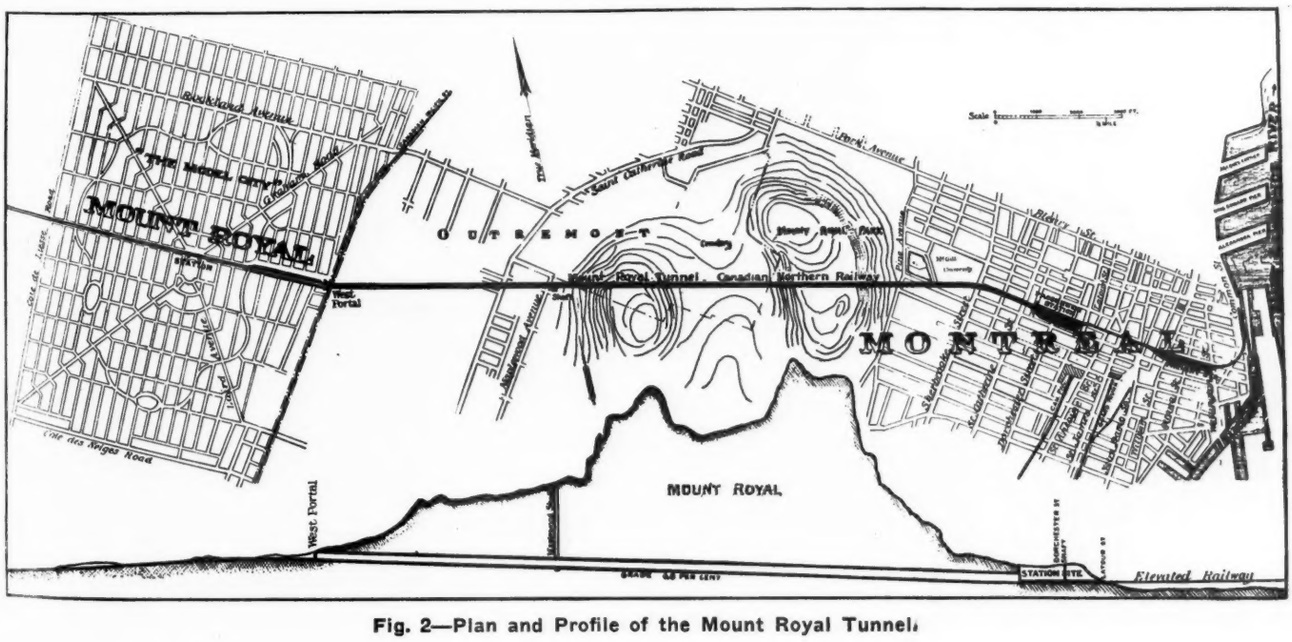


Fig. 2—Plan and Profile of the Mount Royal Tunnel.

twice over the two miles of line from the terminal station to St. Henry, and on the Canadian Pacific over the four miles or more between the station and Montreal Junction.

The location, therefore, of a passenger station which by its proximity to the shopping and business districts could compete with the two existing stations and which could be made a part of a through terminal project, was indeed difficult. Having located the freight line on the other side of the mountain from the city, the only logical entrance for passenger traffic was to tunnel under the mountain. On account of the enormous cost of such a tunnel, this plan was not considered feasible for a long time and was only made practicable in the end by the decision to develop the territory north and west of the mountain for suburban purposes.

The original city of Montreal occupied a strip of low flat land about a half mile wide along the St. Lawrence river. As the city grew, it expanded back from the river until it occupied another flat or terrace extending another half mile toward the mountain. This level, which was originally the residential district, is now occupied by the shopping, theater and hotel districts, and the residences are rapidly being forced out. Some of the more wealthy inhabitants of the city have moved higher up on the mountain slope, but the principal growth has been along the river and around the two ends of the mountain. The development of the north and west slope of Mount Royal, which is well adapted to building purposes, has been made impractical by the length of time required to reach the business district by existing means of surface transportation. In anticipation of the development which will probably occur back of the mountain after the completion of the new tunnel, making an entrance to the business district easy, the Canadian Northern,

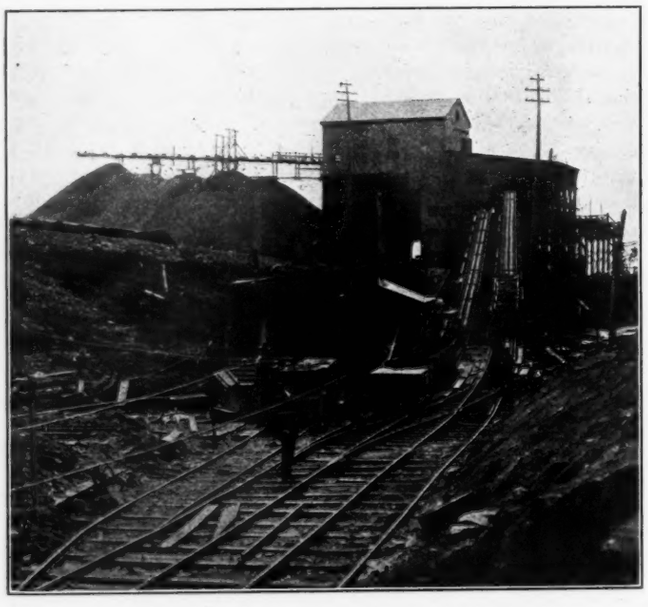


Fig. 3—Crusher Plant and Tipple at West Portal.

through a subsidiary company, bought large holdings of land in the most favorable locations for suburban development. It is expected that the increased value of this land will be sufficient to pay for the entire terminal development in the city.

STATION AND TERMINAL IMPROVEMENTS.

The location of the tunnel was governed in large measure by the location of the passenger station which is to be at the south portal, and in order to give the new station any advantage over the existing stations of the Canadian Pacific and the Grand Trunk, only a comparatively small area could be considered. Within this area the presence of a number of large buildings of permanent character, still further limited the choice and the existence of a large unbroken block of land adjacent to a block covered almost entirely by second rate and old buildings, governed the final decision, which located the station between Mansfield and St. Monique streets and Cathcart and Lagauchetiere streets.

The station will be on a terrace level about 50 ft. below Dorchester street. The elevation of the tracks will be such that the express and commuter traffic will be automatically separated. Carriages can drive directly on to the bridge level where bag-

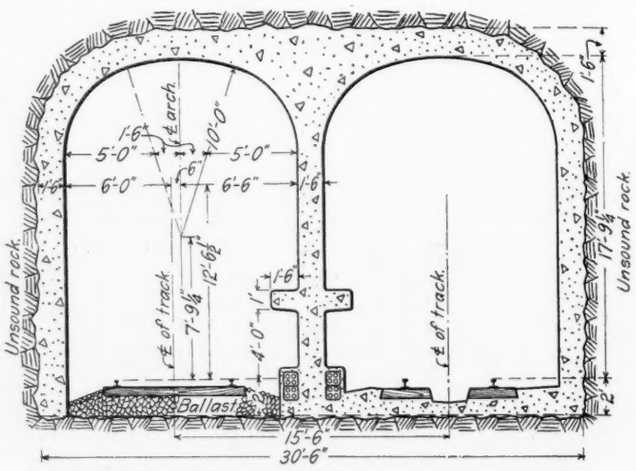


Fig. 4—Typical Sections of Concrete Tunnel Lining.

gage facilities will be provided, and foot passengers will be able to reach the platforms by easy ramps, stairs and elevators, from either above or below.

The new line will connect with the freight line a mile or more east of Cartierville, where division shops will be located, the north tunnel portal being just west of the Outremont yards of the Canadian Pacific. The approach to the portal is on a very flat grade with a descending grade in the tunnel of .60 per cent. The tunnel is 3.25 miles long.

The line will leave the tunnel at Lagauchetiere street and will cross the lower portion of the city on an elevated structure, the plans for which are not yet fully perfected. By this arrangement the company will be in position to connect with any new bridge which may be built over the St. Lawrence, which must of necessity be located above Ste. Helens island to secure a satisfactory crossing of the river. A freight station and yard are also planned along this line, although the details of these improvements have not yet been decided on. Suburban stations will be located at the north tunnel portal and at other points where the traffic may demand, and an electrical transfer yard will be located at or near the division terminal at Cartierville.

The entire terminal will be electrified, although plans for this are still incomplete. Owing to the climatic conditions outside the tunnel, it is improbable that a third rail will be used on the ground, which will probably force the adoption of some form of trolley. This means high voltage, either direct or alternating current. Great strides have been and are now being made in high voltage, direct current railway work and, until very careful and exhaustive studies have been completed, no decision can be made. This is important in the final design of tunnel cross sections, as the amount of head room for 10,000 volts alternating is quite different from that required for 1,500 volts direct current.

TUNNEL CONSTRUCTION.

Mount Royal is a volcanic intrusion of igneous rock, principally Essexite, forced upward through Trenton limestone. Since the first principal eruption there have been many intrusions at various periods that have shattered both the limestone and the Essexite and filled the whole formation with dykes and

sheets of volcanic origin and very diversified character. In general the limestone is good tunneling rock, although where dykes are numerous it becomes somewhat difficult. The Essexite, although very hard, is a good tunneling rock and requires practically no timbering if the blasting is properly done. The most difficult ground encountered is a volcanic Breccia between the limestone and the main igneous intrusion. This conglomerate is so broken and blocky that both drilling and blasting are uncertain and difficult, and timbering is very generally required. The location of the tunnel as fixed by the portals causes the bore to pierce the heart of the mountain, consisting of an extremely hard igneous rock, but it is probable that no lining will be necessary in this material, the only masonry required in that portion being a dividing wall for the purpose of ventilation and safety. This hard rock could have been largely avoided by



Fig. 5—Heading Where Record Progress Was Made, Showing Water Connection to Drills.

making a detour of the main peak, but as this would have made a crooked alinement and would have passed under considerably more public and private property the direct line was considered economically better. In the Breccia limestone and bad ground where lining is necessary, the tunnel is being excavated for its full width and lined as a twin tunnel, thus making a separate and continuous tube for the traffic in each direction. A walkway will be provided on the center wall at about the level of the coach floors with occasional cross passages between the two tubes and a continuous refuse niche under the bench. Electric ducts will be carried along the base of the center walls and large refuges built occasionally in the outside walls for the accommodation of hand cars and repair outfits in times of emergency. The minimum clearance has been limited to 16 ft. 6 in. above the rail, but the standard tunnel clearance will be about 17 ft. 9 in. The standard clearance in width is 6 ft. from the center line of track which may be slightly reduced near the bottom, as for instance, at station platforms.

The tunnel is being driven by the center bottom heading method. This heading is about 8 ft. high x 12 ft. wide, so that with jumbo timbers at the breakups, where the full-sized section is developed, there is still room for a double track (36 in. gage). Work was started at both ends of the tunnel and in both directions from a shaft near the north end. A horizontal bar is being used in the heading and in the breakup entries, with four drills on each bar. Columns are sometimes used in the headings, where emergency requires, and at the haunches of the breakups.

In the heading going east from the intermediate shaft a drill carriage is used, as the rock is very hard and the drilling equipment is correspondingly heavy. This carriage is run on the muck track, and has a belt conveyor that drops the muck directly into the cars. It carries the drill bar on a 20 ft. cantilever arm that travels longitudinally through the drill carriage and also has a vertical and lateral adjustment for setting the bar in the heading. All movements are made by electric motors and controlled by one man. Thus the drills are never removed from the bar, no hose is disconnected in moving in and out except the main air and water hose which travel with the drill carriage. With this machine an average progress of 22 ft. per day is maintained in hard crystalline limestone cut by numerous dykes of extremely hard igneous rock. Without the drill carriage in this structure a progress of about 13 ft. per day was maintained, while in the clear crystalline limestone 18 ft. per day was maintained. In the 31 working days following May 1, a record of 26 ft. per day was made.

In the heading going west from Dorchester street the rock is not so hard as it is back of the mountain so that a lighter drilling equipment is required and no drill carriage is used. Near the Dorchester street shaft, which has thus far acted as the eastern portal, the heading was driven through a soft black limestone with occasional stretches of earth roof. As the rock cover increased, however, the rock became harder so that now the heading is in sound Trenton limestone, which is beginning to be slightly crystalline. There are occasional dikes, as on the other side of the mountain, but they are not so large or numerous.

At the breakups, jumbo timbers are placed in the heading so that traffic can be maintained and the upper portion of the tunnel stoped down and run directly into cars in the heading by gravity. As many of these breakups are opened as are found necessary to keep up with the heading progress.

Where soft ground is encountered, a cap and post system will probably be used, owing to the location of the rock surface; this running in general fairly near the roof line permits the full width timbering to be placed without shifting posts, which rests directly on the rock. As fast as the roof excavation can be carried on in this manner, the arches will be built, so that the roof will be absolutely protected. After the arches are in, the lower excavation will be removed and the arches underpinned, where necessary.

The drilling in limestone is carried on with Sullivan water drills, of which 33 are in service. These drills are operated at an air pressure of 100 lbs., and are provided with an improved method of introducing water in the drill hole to clear out the slush. A pressure of 50 to 100 lbs. per sq. in. is required for this work, the water supply being brought in under pressure from pumps and distributed to the drills by a manifold. The water used is only enough to make a heavy paste of the mud, as excess water is objectionable on account of its liability to get into the drill and make it difficult to lubricate. These drills are mounted on horizontal 11 ft. heading bars with a leg or support in the center to secure stiffness. Four drills

are used at once on each bar. In unusually hard rock three double screw mining columns are used instead of the bar. The average depth of holes is 5.5 ft., and the average speed per drill 16.5 ft.

The firing is done electrically, but an effort is being made to get some special time fuses with electric igniters, by which the cut may be fired electrically, at the same time igniting the time fuses of the relievers and line holes. This should give a better result than the ordinary time-fuse method, without its accompanying risk, and will relieve the men from the necessity of going back into the smoke to load the later rounds.

The muck cars are 3 ft. gage, very low and narrow. They are built with a 3 ft. wheel base, 18 in. wheels and springs on the axles. Both gasolene and storage battery electric locomotives are used. All of the tunnel muck is being crushed for concrete stone and ballast. The crushers are of the gyratory and roll hammered types, to give the desired grades, and both revolving and oscillating screens are used over the bins. The cages used at the shafts are of the counterbalanced automatic-dumping type, with electric hoists. These are designed for a capacity of about 800 cu. yds. per day each.

The plant for the Mt. Royal tunnel will be quite complete. The compressor plants at each end consist of one direct connected cross compound unit of 2,200 cu. ft. per minute capacity, driven by a synchronous motor, and three belt driven cross compound units of 1,100 cu. ft. per minute capacity, with induction motors. The motor is three phase, 62½ cycles at 2,200 volts. Pumps, drills and some small motors are run by air. Most of the power used, however, is electrical.

The shops consist of a main blacksmith shop, equipped with an air hammer, shears, punches, drill sharpening machinery and the usual forges; machine shops equipped with large and small lathes, a shaper, radius drill, saws, pipe machines, emery and grind stones, etc.; carpenter shops, with band and circular saws; and drill repair and testing shops, as well as garage for the maintenance, storage and repair of automobiles and auto trucks.

From May 1, 810 ft. of 8 ft. x 12 ft. heading was driven in 31 working days. The average progress to date has been 400 ft. per month in each heading. The first heading was started July 8, 1912. Since that date one intermediate shaft 240 ft. deep and one portal shaft at the city end, 55 ft. deep, have been sunk, and over two miles of heading have been driven on the tunnel line.

H. K. Wicksteed, chief engineer of surveys for McKenzie-Mann & Company, was in charge of the location of this terminal, and S. P. Brown is the managing engineer in charge of the construction of the tunnel. We are indebted to Mr. Wicksteed for the general information above, and to Mr. Brown for the details of the tunnel work.



Fig. 6—Break-up Showing Heading and Jumbo Timbers.

RAILWAYS OF FORMOSA.—The government of Taiwan (Formosa) held a celebration in the capital city of Taihoku, August 3, 1913, in commemoration of the completion of 1,000 miles of steam railway in the island of Taiwan. Of this total mileage the government owns and operates 327 miles. The remainder is owned and operated by the modern sugar companies.

THE CLAIM DEPARTMENT—AN ASSET.

By L. Moore,
Claim Agent, Chicago & Eastern Illinois.

Experience would seem to indicate that the efficient handling of personal injury claims, both of employees and those not in the employ of the company, as a controlling force in the successful operation of a railroad, is but little considered or understood. The claim department is encountered or brought to the personal observation of the average railroad executive only as a department of expenditure, and he will be nevertheless genuinely surprised when he comes in contact with the actual workings of the modern claim department to discover that it is a most valuable asset.

The old-time claim agent with his often dubious methods is now discredited by the majority of railroads. The personality of the average claim agent or adjuster is as immeasurably raised from that of the unfinished product of a quarter of a century ago as is the method by which he does business. The men who direct and control the policy of a railroad company in the adjustment of personal injury claims should be trained leaders of the new spirit of humanity, the spirit which recognizes that there is a large element of science even in the once decried occupation of adjusting personal injury claims. This recognition must come about because of the great changes made in the common law which have eliminated from consideration the old-time defenses of assumption of risk, fellow servant rule and contributory negligence; also the further fact that the passage of modern employers' liability laws and workmen's compensation acts, and in addition the tendency of juries to favor the claimant and the inclination of the courts to affirm such verdicts, have revolutionized the methods formerly employed in adjusting personal injury claims.

That there was any better method of settling claims than the old way, with its ofttimes shady details, its tricks and chicanery, was a subject of ridicule by many for years, but the astonishing results obtained by the alert and intelligent men of today, who bring to their work minds trained to regard their tasks in the light of an almost exact science have caused the claim departments to be placed on a higher plane than ever before and to make claim adjusting an interesting field for intelligent and efficient men of legal training.

The chief engineer in building his bridges, straightening the curves in the road, laying heavy rails and using rock ballast is not only considering the present, but he is building for posterity. The efficient manager of every department of a railroad company is planning his work for the future, and I know of no branch of railroading where this can be done with greater results to the company than through the medium of a right-minded claim agent, but, in the settling of claims the fixed purpose of saving a dollar regardless of consequences is too often false economy and too often obliterates from our vision the human side. Remember that the traveler who is injured will continue to use the railroad, his children and his children's children will some day be passengers, and the treatment the injured party receives—not so much the amount of money he is paid, but the establishment of a feeling of confidence, of a feeling the railroad company in making a settlement is actuated by a spirit of fairness—will in the long run redound not only to the honor and glory of the claim agent but to the popularity and profit of the railroad company by whom he is employed.

What a versatile man the claim agent must be; he is in the house where the shades are drawn, the spirit of gloom and desperation are around about, and one must listen to the grief-stricken woman who has been left alone because of a grade crossing accident whereby husband and son lost their lives. The poor woman embittered by her loss calls to heaven for vengeance upon the railroad company. Her reason is gone; money can not bring back the loved ones and, in her opinion, the railroad company can offer no defense for the terrible catastrophe. In the first place there must be established a bond of genuine sympathy, then there must be sincerity and an earnestness of purpose and a true manifestation of helpfulness which will tend to bring about a feeling of confidence, and when you have gained the trust and confidence of the aggrieved party the battle is half won. The claim agent crosses the street and becomes engaged in an argument with a hard-headed old farmer as to the value of a Berkshire hog which has wandered on the right-of-way through a broken fence, and is killed. The claim man must be entirely familiar with hogology and able to quote the latest market prices on live and dead pork. Then there comes a claim to be adjusted for damage to pasture land by fire, which it is claimed was started by a spark falling from a passing locomotive. Following these comes a man who claims his land has been damaged by reason of cinders washing down from the right-of-way because the drain pipe is not of proper proportion to carry off the surface water in time of storms. To complete the day there comes a conference with an attorney as to whether the state compensation act or the federal employers' liability applies in the case of a foreign section laborer killed while on duty.

A successful claim agent must do the right thing at the right time and in the right way; he must work from reason rather than from rule. In these days of hysterical activity on the part of unscrupulous attorneys, the greatest duty a claim agent owes to the company and to society at large is to eliminate the "Ambulance chaser," and in so doing conduct a campaign of education, which has for its purpose the prevention of litigation where there are no grounds for an action at law, and to impress upon the community at large the ulterior motive which prompts the unscrupulous attorney to promise a verdict of impossible amounts, provided he can get 50 per cent. of the amount recovered. Sixty per cent. of the time of all our jury trial and first appeal courts is taken up in the consideration of negligence cases, a large majority of which have no merit and should never be brought into court. Actual figures show that of about six thousand suits in negligence, the average payment which the defendants were compelled to make by operation of law, was about three hundred dollars a case. Experience tells us that the average retainer fee that plaintiff's lawyer secures is almost 50 per cent. of the recovery. So that in the estimate given above the injured man in these cases did not get even the small average payment suggested but only about one-half of it. It may be said, without fear of contradiction, that in every case in which there is legal liability and the injuries are serious, all honorable effort is exhausted to make a reasonable compromise, and the railroads of the United States pay without suit many thousands of dollars in compensation.

The taxpayers in one of our larger cities, in the year 1908, paid over $4,000,000 to maintain the judicial system and during this same period 40,000 business men were drawn for jury duty at an expense to the taxpayers of over $415,000 in fees. It is estimated that the judicial institutions of the above-mentioned city cost the taxpayers not less than $6,000,000 a year, and 60 per cent. of it is chargeable to the administration of the law in so-called negligence cases. A presiding justice of the appellate division of the supreme court of New York made the statement that about seventy-five per cent. of the time of the courts was taken up in the consideration of negligence cases, a large portion of which had absolutely no merit.

Who is responsible for this condition of affairs? It can be traced directly to the pernicious activity of the "Ambulance chaser" and his runners. When they hear of an accident they appear at the bedside of the afflicted; they succor him and his dependents and they subsidize his cause. While the claim department is conducting its investigation, wiring the numerous commissions that an accident has happened and filling up elaborate card indexes with data concerning the victim and his dependents, the redoubtable "Ambulance chaser" is on the job

with bread for the family and encouragement for the afflicted in an eloquent tale of what is going to happen as soon as the case is presented to the jury. They are willing to stake all their help and what little they have of reputation against a possible victory in court, obtained maybe, five years afterward. Do not carry away the idea that all lawyers representing plaintiffs in negligence cases are "Ambulance chasers." The contrary is the fact. The majority of plaintiffs' lawyers are honorable practitioners, with the result that the cases are settled and never get into court.

The claim man should with his advance information be able to get to the scene of an accident in advance of the "Ambulance chaser," and it is the writer's opinion that it is the paramount duty of the representatives of the claim department to point out to a prospective claimant the foolishness of litigation, the long delays incident thereto, the dreadful uncertainty of juries, and above all the utter folly of signing a contract with any attorney on a contingency basis because the lawyer has nothing to lose and everything to gain, at least until such time as an agreement cannot be reached between the claim agent and the injured party. Until the day arrives when our laws are changed, the claim man must continue to fight the battle against the unscrupulous lawyer along the lines indicated, and in such better and more effective ways as may occur to the creative brain of each claim man.

THE COAL MINING ADJUNCTS OF RAILROADS.

By John D. A. Morrow.*

According to the decision of the United States supreme court a few years ago, the Hepburn law does not prohibit the ownership by railroads of the stock of coal mining companies. Several railways have made investments of that character, not merely for the sake of obtaining control of fuel supplies, but in some cases perhaps also with a view to an increase in the tonnage of coal transported. In the Census Bulletin on the Statistics of Coal Mines, issued recently, certain tables contain statistics relating to the mines in which railroads are thus interested. Security ownership of this kind is reported to the Interstate Commerce Commission and these reports were used to make the census classification of coal mines by which these statistics were obtained. Of course any mines controlled in ways not reported to the I. C. C. would not be included in the railroad group; furthermore the figures are for the year 1909 and since that time some changes may have taken place, but even so the figures are of interest and value in indicating the general conditions in respect to such properties.

Table 11 of the Census Bulletin shows that out of a total coal production of 458,000,000 tons in 1909 about 122,000,000 tons, or 26 per cent., were reported by mines more or less closely affiliated with railroads. This total was almost equally divided between anthracite and bituminous coal. Tables 23, 24 and 25 present detailed statistics of the Pennsylvania anthracite operators which were allied with the anthracite carrying roads, but the general facts in regard to these producers are well known and, beyond the brief statement that these companies reported more than 75 per cent. of all the anthracite produced and controlled nearly 85 per cent. of all the anthracite land reported, no additional discussion is necessary here. The bituminous mines which are connected with railways have not received so much attention, however, and accordingly a brief résumé of the more important statistics for these mines is given.

Table 45 of the Census Bulletin summarizes the principal returns obtained from a classification which gives separate figures for the bituminous coal mining adjuncts of railway companies, of iron and steel companies, and of other industrial companies. From this table it appears that there were 33 railroad systems which were more or less directly interested in the operation of bituminous coal mines. The coal mining concerns of this class produced approximately 61,000,000 tons of bituminous coal, or nearly one-sixth of the total for the country. They controlled more than 1,500,000 acres of land, of course mostly coal bearing, or practically one-fifth of the 7,700,000 acres reported by all the bituminous operators in the United States. They operated 430 mines out of the total of 6,013, and gave employment to 94,000 wage earners out of the total of 570,000 accredited to the bituminous industry by the census.

As might be expected, more than 93 per cent. of the coal produced by these companies was consumed as fuel; the remainder, a little less than 3,700,000 tons, was coked at the mines, from which 2,400,000 tons of coke were obtained. The total value of this coke at the ovens, together with a small value of by-products, was $5,300,000; while $71,800,000 was the total value reported for the 61,000,000 tons of coal produced. However, the combined value of all products, coal, coke and coke by-products, is given by the Bulletin as $74,000,000, but this result excludes the value of the 3,700,000 tons of coal coked, viz., $2,300,000, and thus avoids duplicating values. On the other hand the total expense of producing the coal, coke and coke by-products was only $65,600,000, likewise excluding the value of the coal coked at the mines. Hence the total value of the products of these companies shows a surplus over the total expenditures reported which amounts to more than $8,000,000. In this connection it should be said that the total surplus for the entire industry was $32,000,000. Accordingly, the mines affiliated with railroads, although producing only about 16 per cent. of the total output of bituminous coal and about 7 per cent. of the coke made at the mines, accounted for more than 25 per cent. of the total surplus. While the census data are not obtained for the purpose of ascertaining profits and do not show the precise amount of profit or loss, they are sufficient to warrant the conclusion in this case that the mines affiliated with railway companies made a better showing for the year than the average of other mines.

The figures also indicate that the operations in which railroads are interested are not small scale enterprises. Their average output per mine was more than 140,000 tons, while that of all other shipping mines was only 70,000 tons. From the standpoint of the operating organization the comparison is even more striking. In making this comparison several subsidiaries all controlled by the same parent company are not considered separately, but are combined and treated as one, e. g., in the case of a railroad with three coal mining adjuncts the owning railroad is considered as a single operator. The returns of all coal mining companies were similarly treated. On this basis it appears that the average output of bituminous coal per operator was 1,800,000 tons for the railroads, while for all other producers it was only 130,000 tons. Table 48 furnishes additional information on this subject. That table classifies these operating organizations according to the total value of products reported (again excluding the value of coal coked at the mines). This classification shows that 21 railroads were each interested in coal mining concerns whose aggregate value of product exceeded $1,000,000; that 10 more were each affiliated with mines whose total value of output was between $100,000 and $1,000,000, and that the two remaining roads were each interested in properties with a value of product less than $100,000. Accordingly, it appears from these figures that most railroads which have made investments in bituminous coal mining companies are, in this indirect manner, rather important producers.

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Proposed New Moroccan Railway.—An inspector-general of roads and bridges and an engineer have arrived at Casablanca with the object of studying the conditions incident to a projected railway between Casablanca, Fez, and Tangier. The line as proposed will run through Rabat, Souk-el-Arba, Lai Aito, and Mequinez. Work on the railway will be commenced in September, 1914, and it is hoped to complete the line in about two years.

FEATURES OF THE KALKA-SIMLA RAILWAY.

Heavy Protective Work Necessary on This Narrow Gage Line Up the Himalayas Results in High Construction Cost.

By Lewis R. Freeman.

It is a remarkable fact that, in spite of its having a gage of but 2 ft. 6 in., the 60-mile long Kalka-Simla railway which negotiates the Himalayan portion of the journey to the summer capital of India, has the highest average cost per mile of any road in India. There are doubtless other 60-mile stretches of line, such as that which includes the remarkable series of double-tracked switch-backs where the Great Indian Peninsular climbs the western Ghauts from Bombay, or the piece of frontier line which the Indian government, regardless of expense, built when Baluchistan was threatened by the Afghans in the 70's, which have cost more than the Kalka-Simla narrow gage, but this has been compensated for by cheaper construction at other points, so that the averages of the complete systems fall far below that of the Himalayan line.

The average cost per mile of some of the prominent Indian railways is as follows: Eastern Bengal State, $83,000; Northwestern State, $70,000; Oudh and Rohilkand, $43,000; Bengal-Nagpur, $55,000; Bombay, Baroda and Central India, $91,000; East Indian, $88,000; Great Indian Peninsular, $76,000. All of these lines are of 5 ft. 6 in. gage, and of modern construction. The Kalka-Simla line, with a gage of but 2 ft. 6 in., has already cost $108,000 per mile, and contemplated improvements will doubtless considerably increase this figure.

The high cost of this line is due rather more to geological than topographical causes. It has to ascend but 5,500 ft. in 60 miles, while the Darjeeling line is compelled to negotiate 7,000 ft. in 45 miles, and while the necessity of maintaining a 3 per cent. grade entailed an exceedingly large amount of tunneling, cutting and filling, the greatest expenditure has gone into protective work to prevent the torrential monsoon rains from carrying away the loose shale formation over which the line is built. The looseness of the rock is the real source of the difficulty, for the rains are by no means as heavy as in the Darjeeling district. When thoroughly soaked this rock runs together and begins to slide like soft slush, and no amount of precautions have served to make the road immune from the resulting slips.

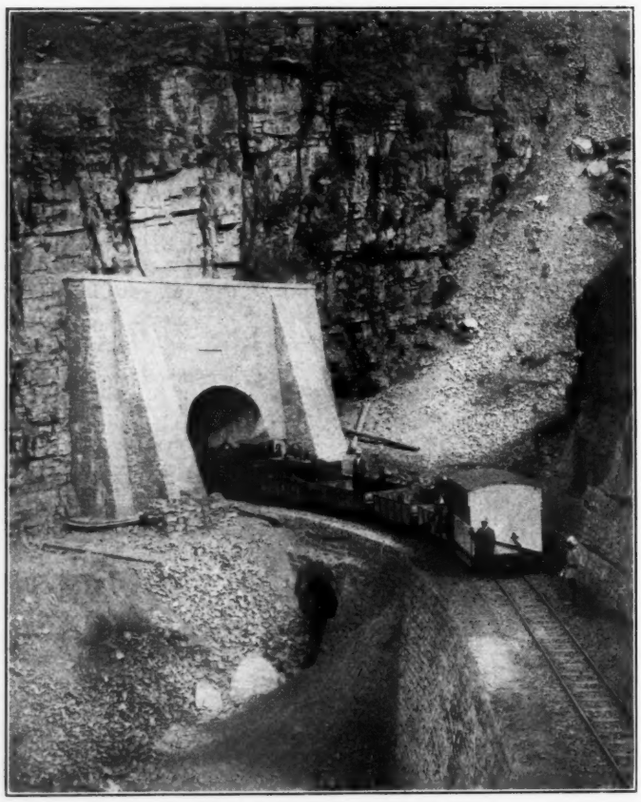
As Simla is the seat of government for all of India for six months of the year, for the province of the Punjab for the same period, and is also all-the-year-round headquarters of the Indian army, the service performed by the Kalka-Simla Railway is highly important. From 1850 to 1903 all the traffic between Simla and the plains was carried on over what is called the Hindustan-Tibet cart road. This was before the days of the auto truck, which has done so much to simplify the problem of transportation for the Insular government in maintaining its summer capital at Baguio, in the Philippines. The congestion of the cart road finally became so great that the construction of a railway became imperative to the continued existence of Simla as governmental headquarters. Work was commenced in 1899 and finished in 1903, the cost of the line ready for opening being $5,000,000, or about $83,000 per mile. Trouble from slides was encountered from the first day of construction and has continued down to the present time, with the result that capital expenditures for protective work have increased the cost of the line by $1,500,000, or to a total of $108,000 per mile.



Loose Rock Formation Through Which the Kalka-Simla Railway Was Built.

Protective work is seen at every turn. The bottoms of the least depressions where water runs are lined with cement where practicable, and where the rock is too loose for that, sheets of corrugated iron are laid to keep the floods from washing away the loose formation. There are a number of tunnels which were run for no other reason than to take the track away from the menace of slides at exposed points, and there are places where

brick walls have been built on the open hillsides to stop the moving rock somewhat after the fashion of the snow-drift barriers on our northern railways. In spite of all these precautions, almost daily trouble with slides and washouts is encountered during the monsoon season, and it is estimated that anything



Difficult Tunnel Approach; Kalka-Simla Railway.

approaching complete immunity cannot be secured under an additional expenditure of $25,000 per mile.

There are 103 tunnels in the 60 miles of the Kalka-Simla line, undoubtedly one of the highest averages for any similar length of track in the world. Most of these are short, but the Barogh, 3,752 ft. long, is next to the longest in India, the latter distinction belonging to the great two-mile tunnel on the Quetta branch of the Northwestern Railway.

The bridges have also been a considerable source of expense. They are mostly short, but of an unusual design, consisting of tiers of brick arches. The lack of a suitable stone close at hand compelled the use of brick, which, while expensive, will hardly prove very long-lived. If the road was being built today, these bridges would probably be built of concrete.

The roadbed is laid with 41-lb. rails on wooden ties, and is being renewed with 60-lb. rails. It is fenced with wire and ballasted with stone throughout. (The fencing, by the way, obviates the necessity of an amusing practice of the Darjeeling line which I have failed to mention: that of keeping a burning log of resinous wood attached to the smokestack, supplemented by a Hindu armed with a bucket of stones on the pilot, to frighten off stray bullocks and other wandering stock from the tracks.) Most of the curves are compound, the limiting radius being 120 ft.

The Simla line, which was built by the Delhi-Umballa-Kalka Company, was purchased by the Indian government in 1906, and has been operated by the latter, through the Northwestern State Railway ever since. The passenger fares approximate 10 cents a mile, first class; 5½ cents a mile, second class; and 1 5/6 cents a mile, third class. The traffic has been considerable, the gross earnings increased from $255,000 in 1906, to $343,000, in 1910. Maintenance has been extremely expensive, however, and the net earnings have been less for the last two or three years than in 1906-7. Special renewals in 1910 reduced the net earnings to $12,000, or 0.18 per cent. on capital. Heavy interest and maintenance charges have been responsible for the fact that the loss to the state in operating the Kalka-Simla line has increased from $60 000, in 1907, to $190,000, in 1910.

Railroad Construction in Southern India.—It is proposed to construct an 80-mile railway, estimated to cost $2,756,833, between Mangalore, an important port in the district of South Canara, southwest coast of India, and Ariskere, an interior town in the state of Mysore. This line will supply a great need of the agriculturists of western Mysore, as it will provide the only direct rail communication between that productive region and the Malabar coast. Construction of the new road is to be financed through co-operation of the Mysore government and the South Canara district board, together with subsidiary assistance by the central government of India. The project has the enthusiastic support of the United Planters Association of South India, and, as a survey has already been made of the route, it is anticipated that active construction work will not be long deferred.



Type of Bridge Construction; Kalka-Simla Railway.

SOME ASPECTS OF RAILWAY REGULATION.*

BY FRANK J. LOESCH,
Local Attorney, Pennsylvania Lines.

The intelligent layman, not an expert in the intricacies of our dual form of government, would naturally infer that when Congress had placed railroads under national control as an agency of interstate commerce, and exercised such control by taking away from the railroads their power to make and maintain rates; by prescribing the character and extent of costly safety appliances; by fixing the railroad's liability to its employees injured in its service; by prescribing a method of keeping its accounts and forbidding any other method, and by a multitude of other regulations, expensive for the railroads to comply with, state control had been effectually displaced.

Not so, however. Upon the hand of the state has been placed the heavy hand of the nation, and so long as both hands do not cover the same regulated spot, both are effective—so long as state regulations are not a direct burden upon interstate commerce, they are valid. No matter how burdensome and costly to the railroad's interstate business compliance with a state statute or regulation may be, if its effect on interstate commerce is indirect, it is lawful. The decision in the Minnesota rate cases has settled the law accordingly. The Supreme Court says in effect that Congress may take such regulative control from the states as incident to its powers under the interstate commerce clause of the constitution; but until Congress does act, a state may make regulations governing local rates, and under the guise of police regulations may make destructive indirect inroads upon earnings from interstate traffic.

The practical application of that principle to a concrete case may be illustrated by the effect of one of the so-called full train crew laws. Such a law went into effect in New York state during this month. It compelled the employment of many hundreds of additional men unnecessary from the standpoint of the safety of the public, the railroads or the ordinary train crews. It was authoritatively stated that that law will cost the railroads of that state $2,000,000 per annum, of which about one-half will fall on one railroad system. The local or intrastate traffic of that system most assuredly cannot carry that unprofitable charge. It must, therefore, be taken from the total earnings of the entire system, from interstate and international traffic. And though the effect may be to reduce the net income below a fair return on the capital of the system, yet under the principles laid down by the Supreme Court, there can be no relief for the railroad, because the effect of the operation of the full train crew law is an indirect and not a direct burden on interstate commerce.

If the Supreme Court adheres strictly to the principles laid down in the Minnesota rate cases, that it would never interfere with the operation of a state law in its effect upon railroad earnings, so long as it was not a direct burden upon interstate commerce, then, by the cumulative effect of state laws of a similar character, burdening the railroads with unnecesasry employees, additions and equipment, any system operating over a number of states could be brought to bankruptcy without hope of relief from the courts.

That this peril is not a remote one we have yearly evidence of. President Darius Miller has publicly stated that in the past eight years the individual states have enacted no less than 1,800 laws for the regulation of railroads—those statutes pertaining to almost every detail of their operation, rate making and accounting.

Railway charters are usually granted only by a state. No railroad charter has any extra-territorial effect. Therefore, every railroad system running through or over more than one state has as many charters for as many railroads as there are states through which its main lines may run, and separate charters for all its other lines and feeders, while the bonds and stocks issued by it are more and more secured upon its entire system and upon the credit of that system. When the federal power deals with the railroad company, it deals with it as an entire system, and takes no regard of the individual railroads chartered by the several states composing the system. This is markedly noticeable in the Hepburn act.

On the other hand, the state takes no control of and is not permitted to control the system of which the state railroad is only a part, nor of the securities which have been issued upon the entire system, nor how a particular statute or order of the commission may effect the system, but considers only the railroad in the particular state as subject to its statutes, police regulations and public policy; and hence the federal and state governments and commissions in their eagerness to let nothing pertaining to a railroad escape their regulations and control, frequently work at cross-purposes for the assumed benefit of the public, but always at the expense of the railroad companies and their bond and stockholders.

The magnitude of the railroad regulation question considered financially, from the standpoints of the amount of capital invested in railroads; from the point of the number of men employed to keep them as a going concern; from the standpoint of the consumer as being the greatest purchasers of manufactured supplies, and from their vital necessity to the comfort and well being of the people in transporting for them almost every necessity required to maintain life in our great and growing cities, is so largely the greatest business interest in the country, that none other can be compared with it.

The railroads cannot be kept in efficient condition without the expenditure every year of large sums of money. During this very month, one of the leading financiers of New York City appeared before the Interstate Commerce Commission to explain in detail why one of the great railway systems of the country would require the staggering sum of $355,000,000 of new capital for betterments, improvements, extensions, motive power and rolling stock upon its system within the next ten years; not in order to make more money but to comply, mind you, with the public demands upon it for increased facilities and efficient and economical transportation of freight and passenger traffic.

One would suppose that the law-making powers would cherish and protect such an industry in the interest of all the people against unfair legislation and destructive regulation, but every session of every state legislature is a refutation of that supposition; and the national legislation is not free from the like attitude. It has been stated that at one of the recent sessions of Congress nearly 2,000 bills were introduced affecting railroads, and it may safely be assumed that not one of them was intended to increase their revenues or decrease their cost of operation.

It is state regulation run mad. There is not sufficient ground for such attitude on the part of legislatures, and it cannot be said that there is any justification in the public mind for the legislative attitude.

The railway officials have submitted themselves and their properties in entire good faith to the national control and have not resisted any reasonable state control and are obeying many unreasonable state and municipal regulations and laws which would never be thought of applying to any other industry. The payment of rebates has long since ceased; there are no more favored shippers, all being treated alike without discrimination; one community is not built up at the expense of another community; the rates are no longer adjusted so as to build up monopolies and the wealth of individuals; they are no longer in politics; even in Illinois, as in many other states, the issue of free passes except to those designated by law will soon be a crime; there are no longer railway kings who defy public sentiment; the attitude of present railway officials and financiers is that of men seeking the good will of the people; publication is made to the last detail of railroad operations so that anyone, expert in the science, and the various state and national commissions through their officials, can, by means of them, learn the exact operation of a system, its costs and its net return to the last dollar. Their books are open. Every payment made is

*Abstract of paper presented before the Society of Railway Financial Officers, Highland Park, Ill., on September 24.

subject to the scrutiny of federal and state commissions. Nothing is concealed or attempted to be or can be concealed.

When it is sought to raise additional means by new financing, the details are laid before the respective commissions and the federal commission by requirement of law, or voluntarily, as evidence of good faith, so that today there is no longer any present reasonable ground for the former feelings of public hostility towards railroads.

Without dilating further upon the legal difficulties which daily arise and call for solution in consequence of this dual legislation and regulation by nation and state, and its certainty of remediless injury to the railroads and to the whole country, we may ask whether any immediate relief can be hoped for.

To this there must be a negative answer, because time is essential to inform the people and to create a new public opinion towards railroads and the enormous capital which is invested in them, and which must receive a fair return if this country is to continue the prosperous and progressive nation it has been to this time. The hostility of the past must by educational work be converted into the friendship of the present and of the future. The people must be educated to a reasonable view of the mutual relationship existing between them and the railroads.

The capital invested in railroads is in effect a trust fund. If the stockholders as owners of that trust fund owe a duty to furnish reasonable facilities of transportation to the public, at rates fixed by the public, and have all the risks of that investment, and if the public in its national, state and municipal character furnishes none of the trust fund and assumes none of the risks, and the railway cannot exist without such fund (as it cannot), then it is the correlative duty of the nation and of the states to see to it that the trust fund is not depleted by unwise legislation, beyond a fair return upon the money invested in the fund.

It seems not to be realized that the trust fund invested in the bonds and stocks of the railroads of this country, amounting to billions of dollars, is owned by hundreds of thousands of holders, men, women and children, and a very large proportion is so held in small lots and upon the income from which the holders are largely dependent for their living. The capital so invested represents past sacrifices and savings, and is as much entitled to consideration as the money invested in a municipal bond, in an individual mortgage, or a house and lot.

We always have great respect when we see the owner about his property ready to protect it. Against the railroads, much hostility has been worked up for real or fancied private and public wrongs, and carried into vicious legislation because the railroad is always visible and the owners of it are never seen about.

It must be brought home to the public by educational work of the most persistent kind that the railway officials and employees are trustees of a trust fund in their charge, in which the public has equal interest with the owners, because dependent upon it for good service, and that they are administering it according to law in perfect good faith, by rendering, first, to the public, prompt and efficient service, for which they should have reasonable rates and, secondly, to secure a fair return to the bond and stockholders on their investment in order to maintain the financial credit of their enterprise, and that they cannot do the impossible things which it is daily asked they shall do, as though the railroads had all the money in the world at their instant command.

Two concrete illustrations of what the writer has in mind may be here given. A collision recently took place on an eastern railroad in which wooden coaches were telescoped and over a score of people were killed. Every railroad man knows that it was not the lack of steel coaches which caused the accident and the loss of life. The accident would have occurred under the circumstances, though it is likely there might have been less loss of life; but a public cry went up for immediate steel equipment of all passenger trains. If the railroads had the money the equipment could not be manufactured in years; but as shown by careful estimates, it would take more than $600,000,000 to secure such equipment for all the leading railroads, a proposition impossible to finance now or at any time.

A number of grade crossing accidents, whereby lives were lost through the heedlessness of automobile drivers or owners, has brought a hue and cry for the abolition of all grade crossings, at the cost of the railroads. One of the railway systems has shown by expert estimates that it would cost at least $600,000,000 to abolish all the grade crossings upon its system alone, and that it has already expended $62,000,000 to that end, and it could only raise a few millions each year for that purpose.

If public opinion cannot be formed in each state to see the unwisdom of such injurious laws and bring to an end these great grists of unreasonable and even hostile local legislation, then the railroads must turn to the nation for relief.

The chaotic condition of railroad legislation has a parallel in the anarchic, commercial and monetary conditions which existed among the thirteen states between the close of the Revolutionary War in 1781 and the adoption of our present Constitution in 1787. No two states had the same kind of money and no state could keep its paper money at par. Every state having a seaport levied customs tariffs as it pleased upon commerce entering its ports for other states, regardless of the interests of the country as a whole, so that trade came to almost a standstill and bankruptcy was the order of the day.

It was that condition of things which proved the strongest inducement to the adoption of the Constitution. Anything was better than the anarchy which existed. A single government was sought, and it has obtained from that time to this in the Constitution, notably in the so-called commerce clause of the Constitution. Under that clause, as said by the Supreme Court in the Minnesota rate cases, "The power of Congress to regulate commerce among the several states is supreme and plenary. It is complete in itself, may be exercised to its utmost extent and acknowledges no limitations other than are presented in the Constitution."

Local railroad regulation is under present law committed to the individual states, although it may have such a relation to interstate commerce as to be within the reach of federal power. But the court adds—

"In such case, Congress must be the judge of the necessity of federal action. Its paramount authority always enables it to intervene at its discretion for the complete and effective government of that which has been committed to its care, and, for this purpose and to this extent, in response to a conviction of national need, to displace local laws by substituting laws of its own. The successful working of our constitutional system has thus been made possible."

Under that statement of the powers of Congress in the premises, the railroads have a right to look to the nation for protection, not for themselves alone, but for all the industrial interests and the general public, which are dependent upon them for their continued prosperity.

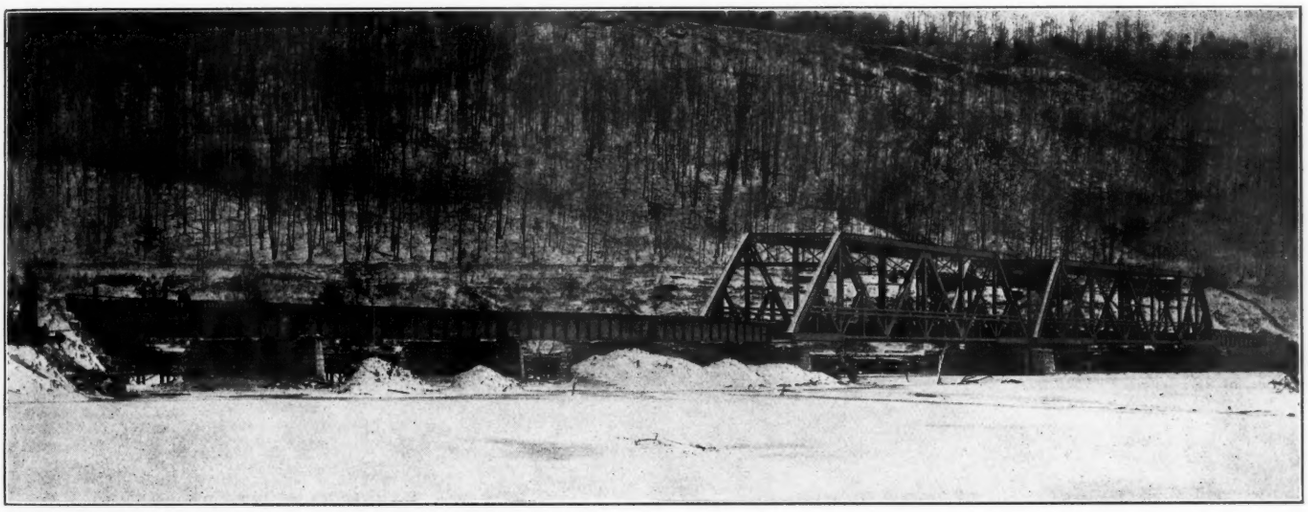
The writer has no desire to see the railroads entirely under the control and regulation of the federal power, but as our forefathers in 1789 found the certainty of strength with the possible evils of one government preferable to living under the losses, vexations and uncertainties of thirteen weak and grasping states, so it ultimately may be the cry of the people themselves that one firm controlling power over the railroads will be better than a mixed control divided among 49 powers with endless vexation and at ruinous cost.

The railroad officials and employees are not alone interested in these vital questions. They affect the public in every relation of life. It should therefore be the pleasure of all citizens to get a correct understanding of the vast interests which are imperiled by unjust legislative treatment, federal, state and municipal, of this the nation's greatest industry, and aid in forming righteous public opinion upon it. For it must never be forgotten that public opinion ultimately in the last analysis makes and maintains the laws we must live under.

BOSTON & MAINE EXTENSION FROM HINSDALE, N. H., TO BRATTLEBORO, VT.

An important line of the Boston & Maine extends from Springfield, Mass., north along the Connecticut river into northern Vermont and Connecticut over which, in connection with the New Haven, a number of through trains are operated from New York. Between South Vernon Junction, N. H., and Brattleboro, Vt., 11 miles, and also between Windsor, Vt., and White River Junction, 14 miles, the Boston & Maine operates over the tracks of the Central Vermont. In the readjustment of railway conditions in New England, the Boston & Maine has just completed the construction of a new double-track line from Hinsdale, N. H., four miles north of South Vernon Junction on its Asheulot branch on the east side of the Connecticut river, to Brattleboro on the west side of the river, to avoid the necessity of using the tracks of the Central Vermont on the west bank between these points, and will operate the 12 passenger trains in addition to several freight trains now handled on the Central Vermont, on this line. The new line is on the east bank of the river to a point about one mile south of Brattleboro.

This line is about seven miles long and its construction involved the moving of over 1,400,000 yds. of grading, 145,000 yds. of which was rock. It is graded throughout for two tracks, the first of which was placed in service June 23. The maximum grade is 0.5 per cent. and the maximum curvature four degrees. The line is being equipped with automatic signals, and is laid with 85-lb. rail on gravel ballast secured from a pit on the line.



General View of Connecticut River Bridge.

All grading was done by contract by the Holbrook, Cabot & Rollins Corporation of Boston. Because of the heaviness of the work a comparatively large amount of construction equipment was installed, including seven steam shovels, five Brown hoist cranes, 15 40-ton standard gage locomotives and 118 12-yd. air dump cars. All equipment was brought in from the south end of the line over a standard gage construction track built for this purpose with 5 per cent. grades and 20 deg. curves. The roadbed is graded 39 ft. wide in cuts and 31 ft. on fills, with all tracks laid on 13 ft. centers.

With the exception of one fill containing 400,000 yds. of material two miles north of the south end of the line, and a cut requiring the removal of 450,000 yds. immediately adjoining this fill on the north, the grading was comparatively uniform for the entire distance. This cut presented an unusual and difficult problem. The maximum depth was 82 ft. Although all surface indications pointed to the entire cut being composed of sand, when the first 20 ft. of material was removed a very wet sliding clay mixed with quicksand was encountered all the way down to grade. This condition made the operation of steam shovels extremely difficult. It was necessary to support them on a heavy plank grillage, and even then the mud rose 2 ft. through this grillage on several occasions after storms, necessitating pulling the shovels back. At other times the sides of the cut slid in with sufficient force to move the shovels laterally as much as 8 ft. This condition was finally overcome by removing the sliding material in terraces starting at the top and backfilling to the slope line with sand cast in from the top. This operation was repeated until grade was reached. The cut was also excavated 3 ft. below the subgrade and backfilled with sand, while drain tiles were laid in sand along the toe of the slope. These measures proved effective in preventing further slides, and the finished cut gives little indication of the material really encountered. The sand in this and other cuts will be covered with cinders later to prevent its drifting.

With the exception of a bridge 911 ft. long across the Connecticut river, just south of Brattleboro, the structures are comparatively unimportant. This bridge consists of two 250 ft. through combination pin connected and riveted truss spans, with four 80 ft. deck plate girder spans on the north approach, and one 80 ft. deck plate girder on the south approach, and required 2,300 tons of steel. The substructure and through trusses are built for double track while the girders are erected on the westerly track only. The alinement on the bridge is a 4 deg. reverse curve spiralled with 200 ft. of tangent across the northerly truss span. A 0.3 per cent. grade ascends toward the south. The distance from the base of low rail to the surface of the river at normal stage is about 27 ft. The through spans are 41 ft. 8 in. deep center to center of chords, the southerly span being 38 ft. 6 in. wide center to center of trusses, while the northerly span is 32 ft. 4 in. wide, this difference in widths being necessitated by the curvature of the tracks.

The foundations were of concrete up to the water level and stone above that. The southerly abutment was founded on rock. Pier one was built on rock, which at that point was overlaid with 7 or 8 ft. of gravel. This gravel was dredged and on account of the sloping surface of the rock it was leveled off by drilling holes with well drills and blasting. After the site had been leveled, sheeting was driven and the concrete deposited under water. At piers two and three, 8 ft. of gravel was dredged, supporting piles were then driven and the concrete was placed in a timber grillage 5 ft. thick on which stone was laid and the entire grillage was sunk into place by the use of a timber caisson. Sides were attached to the grillage which were removed after it had reached its final position. Piers four, five and six were built on piles driven after the

gravel had been dredged. Sheeting was driven around these piers and was removed after their completion. The north abutment rests directly on gravel, as this material was so hard that piles could not be driven through it. The substructure for this bridge was also built by the Holbrook, Cabot & Rollins Corporation.

As the masonry work was started from the north abutment and proceeded south, the erection of the bridge also started from this end, necessitating placing the single track girder spans first. This was accomplished by means of a self propelling steel derrick car of 30 tons rated capacity with a 50 ft. steel boom. After the girders for the end span were set with the car standing on the west abutment and the laterals, ties and rails were in place, the girders for the next span were loaded one at a time crosswise on a small four wheel truck or push car and shoved out to the end of the span already erected. The girders were then picked from the push car by the derrick and set in place. This method was necessary to allow the derrick car to get as close as possible to the end of the span previously set, as it was necessary to reach out 42 ft. to place the 82 ft. girders.

The truss spans were erected on falsework by means of the derrick car. For the south span, nine piles 74 ft. to 76 ft. long were driven under each panel point with a floating driver using a steam hammer instead of the usual drop hammer. The water at this point was from 32 ft. to 45 ft. deep and the piles were driven to a penetration of approximately 18 ft. through hard sand and gravel. In spite of the excessive depth of the water, no submarine bracing was used on the piles, as they were all of extra large size and almost perfectly straight from tip to butt. They were cut off 11 ft. below the base of rail and capped and braced in the usual manner.

After completing the falsework, the floor system was placed on the camber blocking, the web members and bottom chord bars were placed and all intermediate and bottom pins driven

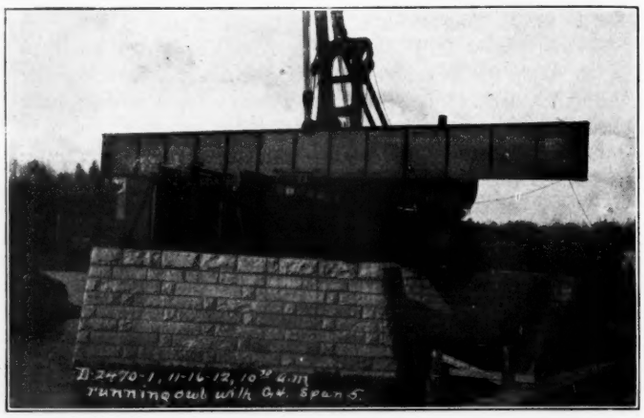


Terracing Slope in Sliding Cut.

with a rail swung from a runner line on the boom of the derrick car. In erecting these spans the material was run out on one track beside the derrick car, which stood on the other track. After the web system and bottom chords had been connected up the top chords were placed in their final position and the top chord pins were driven with a rail swung from a runner line on the boom as above, after which the camber blocking was knocked from under the floor system and the span was swung clear of the falsework.

The other through truss was erected in the same manner except that as the pier on which the south shoes were to rest was not finished until after the span had been practically completed, the two end panels were cantilevered over the pier from the falsework, the two end panels of the bottom chord for each truss being made stiff members instead of eye bars to allow them to take the compression resulting from this cantilever action. After the erection was completed the falsework was removed with the derrick car.

The heaviest members placed by the derrick car were the four end top chord sections in the north truss span, each of which weighed 35 tons. In making any heavy lift this car was blocked with one 70 ton Norton jack on each side under the front bolster and was guyed sideways with a set of four sheave manila rope blocks on either side leading from the top



Carrying Girder for Brattleboro Bridge Out on Small Truck.

of the "A" frame down to the floor beams or stringers. Due to unforeseen difficulties encountered in building the substructure, the erection of this bridge was carried on in the winter with snow and ice almost constantly present.

A unique feature in the design of the truss spans was the use of skid girders, these girders being of the latticed type and riveted to the web system of the trusses in a horizontal position about 4 ft. above the deck and designed to serve as a protection to the truss members in case of a derailment on the bridge.

At Brattleboro a new union station with the Central Vermont is planned, and preliminary work is now under way.

This work is all being handled under the direction of A. B. Corthell, chief engineer, Boston & Maine; F. C. Shepherd, engineer of construction, and H. L. Farwell, resident engineer. H. L. Ripley was engineer of construction for the contractors. The Brattleboro bridge was erected by the American Bridge Company of New York. J. B. Gemberling, division erecting manager; H. G. Reynolds, general foreman, and S. Savage, resident engineer.

The New Station at Basle.—One of the largest and most expensive railway stations in Europe has just been completed on the Swiss-German frontier at Basle. The station, which is on German territory but touches the Swiss frontier, cost nearly $15,000,000, and the work of construction took nearly three years.

New Line for Spain.—After serious obstacles were overcome, owing to opposition of competing interests, the Pena de Hierro Copper Mining Company obtained a concession for a railway which will carry its product 12 miles from Pena de Hierro to Castillo de las Guardas, whence it will be brought on the Cala company's railway to Seville for shipment. The Pena company's line is now building and will probably be completed before the close of 1913, and will enable it to ship some 350,000 tons annually. The new railway is another sign of the development of the enormous mineral wealth of Seville district. As for dump cars and other railway equipment necessary, the company may be addressed: Pena Copper Mines (Ltd.), 3 Lawrence Pountney Hill, London, E. C., England.

AUTOMATIC STOPS AND AUDIBLE SIGNALS.

The Maryland & Pennsylvania announces that the Jones automatic train stop and cab signal, which has been in use on that road to a limited extent for some time past, is to be installed on a length of seven miles of its line; and it is intended during the coming year to equip the road for its use over a distance of 19 miles more, or 26 miles in all, Baltimore to Belair. The apparatus of the Jones system was briefly described in our issue of April 11, 1913, page 834, in connection with a report on automatic-stop experiments in all parts of the country.

In connection with the present announcement we have gathered the following notes concerning other experiments with automatic stops, these notes being in the nature of a supplement to our April article referred to above.

Canadian Pacific.—The Prentice "wireless" automatic train control apparatus, which was installed experimentally on the tracks of the Canadian Pacific, near Toronto, has been taken up and carried off.

Chicago Great Western.—Nothing seems to have been done with the Gollos automatic stop since the tests reported in the *Railway Age Gazette* last November.

Chicago & Eastern Illinois.—The installation of the Miller train control apparatus on this road has not yet been finished; it is expected that preliminary experimental tests will be made within the next month or six weeks.

Cincinnati, New Orleans & T. P.—See Queen & Crescent.

Delaware & Hudson.—For the Federal audible signal, see Delaware, Lackawanna & Western.

Delaware, Lackawanna & Western.—The automatic train control apparatus made by the Union Switch & Signal Company and installed on this road near Newark, N. J., has been tried; and experiments are still going on. The Federal Signal Company's audible signal is being installed, and preliminary tests will probably be made within a few weeks. The International Signal Company, of New York, will be ready to make tests in a few weeks.

Erie.—The experiments being made under the direction of H. D. Patterson are still going on. No apparatus has as yet been installed on the tracks.

Maryland & Pennsylvania.—See above.

New York Central & Hudson River.—The experiments with the Induction Signal and Safety Company's apparatus have been discontinued. The experiments with manganese rails have not yet progressed far enough to admit of operating tests. These two devices are the only ones now being experimented with on the New York Central.

New York, New Haven & Hartford.—The apparatus of the Union Switch & Signal Company, installed on this road near Hartford, Conn., is nearly ready for a test. The International Signal Company of New York is preparing to make an installation, near the same place, but it will be several weeks before tests of the International apparatus can be made.

Pennsylvania Railroad.—J. P. Finnegan expects to have his induction apparatus ready for trial within a month.

Pennsylvania Lines West of Pittsburgh.—The Gray-Thurber automatic stop installed on this company's four-track line between Jack's Run and Glenfield, Pa., has been experimented with during the past summer, and a number of formal tests were made. No report of these tests has been published, but the results seem to have been in some important respects unsatisfactory to the officers of the road.

Queen & Crescent.—Experiments with the Buell automatic train stop are still going on.

Italians to Build Railways for Turkey.—Count Nogara, the Italian delegate in connection with the Ottoman debt, has signed a contract with the Ottoman government for the construction of a vast network of railways in the southwest of Asia Minor, with a terminus at Adalia. The new lines will be constructed by Italian capitalists.

A NOVEL PLAN FOR SOLVING THE RAILWAY LABOR PROBLEM.

By George A. Clark.

The rank and file of employees in the great industries of the country are demanding an increasing voice in the management of the industries in which they labor. This suggestion has been very much in evidence in recent comment on the relation of capital and labor. At the same time, we are informed that labor is becoming increasingly inefficient, that compared with the burden carried by capital the workers of this country are not increasing their output in proportion to the improvement they have secured in working conditions and compensation.

Whatever else may be noted, at least three facts appear to characterize the present relations of railroad employees and employers.

(1) Employees belonging to labor organizations have placed the interest of the company secondary to that of the organization.

(2) Labor leaders have tended to adopt an irresponsible attitude with reference to the ability of the companies to comply with their demands.

(3) There is mutual distrust between the employees and the companies as to their willingness and ability, respectively, to play the game fairly at all times and under all conditions.

As a programme involving the immediate realization of certain ends, in this case the elimination of certain types of favoritism, increased pay and better working conditions generally, there is no effective method by which the merit of the labor programme can be denied. By means of organization certain classes of railroad employees have been able to materially better their condition. Without organization, certain classes of railway labor, notably the station agents, clerks and others, are but little better off than they were twenty years ago. Certainly, such a comparison is an effective answer to the employee in doubt as to the first object of his loyalty. However apparent the ultimate fallacy in such an arrangement, there is no denying that at present the organization man has been well rewarded for his loyalty. To excuse or explain the conditions under which this situation has arisen will not eliminate this obvious fact. One of the most pressing problems arises out of this condition. How can the railroad employee be impressed with the fact that loyalty to the interest of the company will be more profitable to him than loyalty to an organization which at present holds a sort of Robin Hood relation to the railroad industry and the public at large? This problem is more fundamental than that underlying an "efficiency campaign" or a "safety first" movement. Given loyal, satisfied employees, and you will have an efficient organization and a maximum of safety both for employees and for the public.

Labor leaders have been inclined to take the position in recent controversies that it was no concern of theirs as to the manner in which money would be provided to meet their demands. In a recent editorial in this magazine attention was very properly called to the high-handed manner in which they were carrying themselves. Such an attitude is a menace to the welfare of not only the railroad industry but the entire industrial and commercial life of the country. Such an attitude has become possible because of the increasing complexity of our life accompanied by a continual strengthening of the organization of certain classes of employees. Some way must be devised which will make it possible for labor leaders to appreciate not only their own position, but the needs of other interests in the same industry.

No more serious than the two conditions just cited, but certainly more regrettable, is the growing distrust on the part of both employees and employers. The recent controversy furnishes good material on this point. First, the labor leaders made a statement comparing the increases in dividends as contrasted with increases in wages of employees during the past twenty years. A novice at statistics would have known at a glance that the statement as to increases in dividends was not representative, that it did not take into account the enormous amount of intercompany payments. To an outsider it appeared that the state-

ment was presented with the hope that it would mislead. Certainly confidence will never be established by such methods. On the other hand, we have the managers presenting the rather startling proposition immediately following the passage of an act designed to meet a particular situation and at once, that not only the questions raised by the employees be arbitrated, but the whole question of wages, conditions of employment, etc., be opened at the same time. No one will deny the right of the managers to avail themselves of the opportunity accorded by the new law, but certainly their demands presented at the time and in the manner they were would not tend to create confidence on the part of employees.

The ascendency of the organization as opposed to the employer, the evident irresponsible attitude of labor leaders and mutual distrust, are at least three unfortunate phases of present day labor problems in the railroad business.

How may these conditions be eliminated? How may the demand on the part of labor for a more prominent voice in the management of all industry be adequately met? How can both employer and employee arrive at a better understanding of the problems that each is confronted with?

As a small investor in railroad securities it has appeared to me that representatives of the employees might very well be represented on the directorates of railroad corporations. Such a suggestion may be regarded as revolutionary in our conception of the relation of labor and capital and in our understanding of the functions of a director in a railroad corporation. However, without reference to the novelty of the proposal, a frank consideration of the present difficulties of capital and labor and the particular merit of this suggestion may be profitable.

Briefly, four tests may very properly be applied to such a suggestion.

(1) Is an employee qualified to assume such a relation to the corporation employing him?

(2) Would it tend to eliminate the evils complained of?

(3) Would it be good public policy?

(4) How could it be best accomplished?

Aside from the technical qualifications as a director which it would be necessary for the candidate to possess, in the way of stock ownership, etc., there is nothing essentially different from the standpoint of the railroad corporation in the proposed relation it would hold to its employees and the relation which it now almost universally holds to its bankers. We have accepted the fact that the banking representative of a railroad corporation should have some voice in its management. In this instance the railroad is in the market for money with which to carry on its development. The banker wishes to be able to assure his clients that the securities are what they are represented to be, and that the management is honest and able. Carrying the analogy a step farther, the railroad is in the market for labor. Representatives of labor should be in a position to assure themselves that the conditions of employment are the best that are consistent with the welfare of the organization.

The second question may be answered in the affirmative. Such a relationship would tend to eliminate the evils complained of. It would identify the interests of the employee with the organization with which he is connected. A number of attempts have been made at various times to give employees a more permanent interest in the organization than that of the pay envelope. Various schemes of stock ownership, etc., have been worked out with varying success, but so far as is known in no instance in the railroad field have these programmes been carried to their logical conclusion and the possession of the stock made the basis of representation on the board of directors.

The most effective means of correcting the evil of irresponsibility on the part of labor leaders is an opportunity for them to secure first hand knowledge of the problems of other men concerned in the industry. Such knowledge may be made a tremendous influence for reasonableness in the adjustments which must be made from time to time in any industry. Intelligent co-operation not only on the part of the railroad capitalist, but also on the part of the railroad employee, is the only basis upon which any security for the future may be had. Too many representatives of capital have been imbued with a desire *to do* something for their employees, and too few have as yet reached the point where they are willing to work with them. Paternalism in industry, however well intentioned, is no more acceptable than in government. Co-operation between the workers and the investors in the railroad industry will eliminate an apparent necessity for any form of paternalism. Co-operation will operate to direct the loyalty of employees along proper channels, it will eliminate a dangerous type of irresponsible leadership, and it will do away with occasion for distrust in very many of the relations of the two interests.

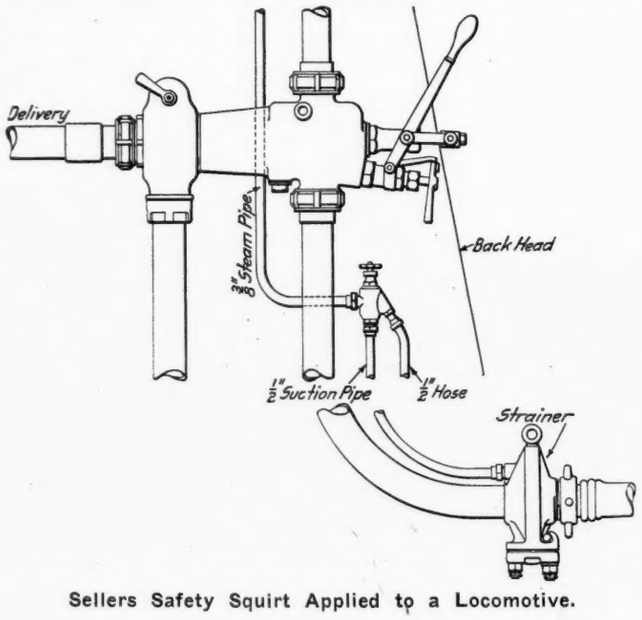
Such a suggestion, if adopted, would be good public policy. There is nothing about the railroad business at the present time, subject as it is to federal and state supervision, which would make it unwise for employees to be represented in the manner suggested. On the contrary, it would give confidence to employees generally in the safety and good faith with which investments might be made in railroad securities. It would discourage excessive demands for any particular class of employees or investors for that matter. It would develop a sense of permanence in the relation of the average employee to his company.

The selection of directors should be made as now, with the added provision that the employees through their investment association, through their organization, or by whatever agency was best adapted to the needs of a particular company, should nominate several candidates from which the existing board could make a selection. This is principally an administrative question and of necessity a method should be developed to meet each situation. The selection should be representative both for the employees and the needs of the investors.

In some form or another labor will have an increasing voice in the management of the industries of the future. The suggestion outlined affords one logical and natural method by which this demand may be met and by which certain serious difficulties may be overcome. The company which will adopt such a suggestion will emphatically endorse the principle of co-operation between railroad employees and railroad investors in working out their mutual problems.

SAFETY SQUIRT FOR SPRINKLING COAL.

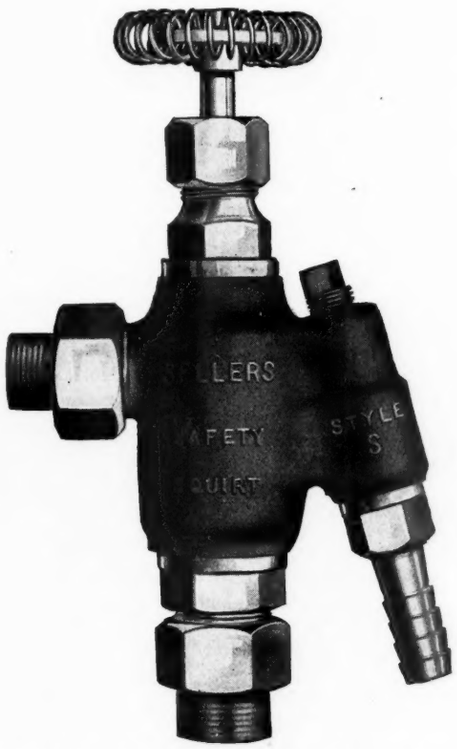
The long established and simple method of wetting the coal in the tender by means of a squirt hose is one of the most recent locomotive attachments to receive radical improvement. The last



Sellers Safety Squirt Applied to a Locomotive.

annual report of the chief inspector of locomotive boilers of the Interstate Commerce Commission records 243 accidents due to the failure of such apparatus, of which a large proportion might have been avoided by the introduction of a safety device. These accidents were due to the bursting of the hose and the scalding of the enginemen and to the slipping of the hose from its union, etc.

The old arrangement has, however, the advantage of simplicity and ease of operation. It requires little trouble to open the valve from the injector delivery or from the boiler, and were it not for the excessive temperature of the water used and the high pressure in the hose, there would be little danger of accident. A



Safety Device for Wetting Locomotive Coal in the Tender.

superseding device therefore must be convenient and simple to operate, and deliver a low pressure jet of cool water.

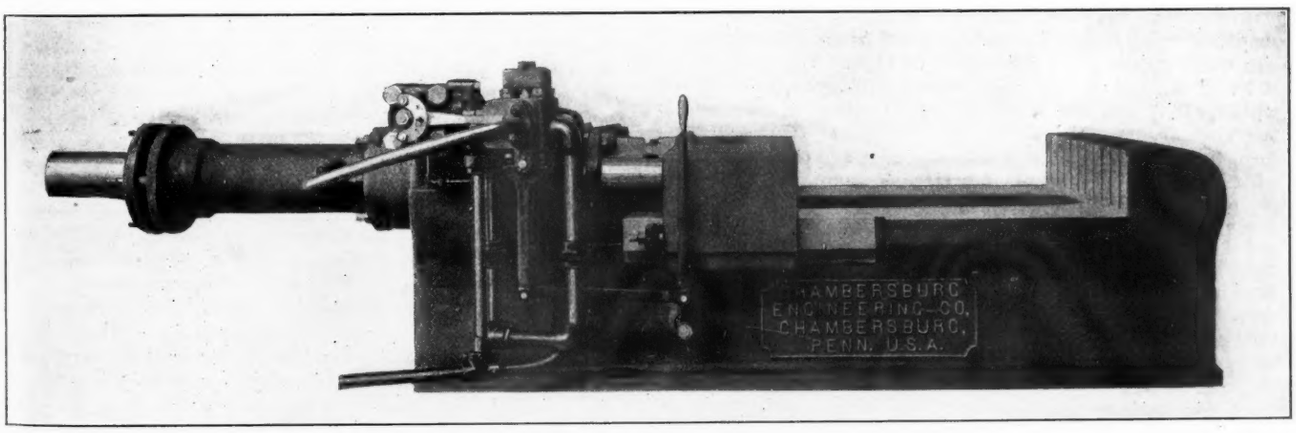
The accompanying illustrations show a safety squirt, which has been produced by William Sellers & Company, Incorporated, Philadelphia, Pa. It is operated by steam from the boiler and is connected by a ½-in. pipe to the strainer on the left hand injector for its water supply. Opening the valve at the top produces a strong suction which lifts the water supply, discharging a low pressure jet through a 5/16-in. nozzle the full length of the tender. The temperature of the water is about 110 deg., which is suitable for either winter or summer. The operation of this safety squirt is the same whether it is placed above or below the level of the water in the tank; the internal construction prevents outflow through the hose when it is placed under a head of water, or if the injector is used as a heater. The suction branch contains a water check valve which is normally closed, but opens automatically when steam is admitted by the valve at the top. This device is now in quite extensive use and is giving good service.

HYDRAULIC FORGING AND BENDING PRESS.

The illustration below shows a hydraulic forging and bending press for engine and car shop work, such as the making of equalizer bars and other heavy bending and straightening which is commonly done in a geared type of bulldozer. This machine will handle a wide range of work and the application of the power is direct and positive. A further advantage claimed for it is that of being safe from breakage due to the operator putting in work which has become too cold or is too large, which in a geared type of press results in stripped gears, etc. A number of these machines have been installed in locomotive building plants; the usual capacity is 100 tons arranged so that either 40, 60, or 100 tons may be used, depending on the size of the work. This results in a saving of power. A large pull-back provides a quick return stroke and ample power for stripping the dies. The field for such a press in a locomotive or car shop is large and it is claimed for this machine that it will accomplish such work at minimum cost.

This press is manufactured by the Chambersburg Engineering Company, Chambersburg, Pa.

Cadiz-Algeciras-Malaga Railway, Spain.—The project for a railway connecting Cadiz more directly with Algeciras (Gibraltar) and with Malaga meets with the approval of the traveling public and the shippers who have hitherto been obliged to depend upon means of communication that are at best inadequate. The present mode of travel between Cadiz and Algeciras is either by sea or by motor bus, the latter a very pleasant journey for travelers without much luggage. This popular motor trip of about 68 miles costs only $4.50, or less than half the railway fare from Cadiz to Algeciras; for the journey by rail involves a long detour way of Seville, and occupies at least 15 hours. Thus the advantage of the proposed railway are obvious—connecting Cadiz more directly with Gibraltar, and Gibraltar more directly with Malaga. The route from Cadiz is to pass through Chiclana, Medina and Alcala, towns entirely without railway facilities; crossing the Algeciras-Bobadilla railway, to Castellar; thence south to Algeciras and northeast to Malaga.



Hydraulic Press for Heavy Forging and Bending.

General News.

The Illinois Central has recently ordered drinking cups to supply 4,000 passenger cars. They will be sold from slot machines at a cent apiece.

Car repair shops of the Armour Car Lines at Chicago, including a number of refrigerator cars, were destroyed by fire on the night of October 3.

At the bowl-shaped track at Brooklands, near London, England, October 1, an automobile of 30 horse power was run 1,079.26 miles in 12 hours, an average rate of more than 89 miles an hour. The best previous record was made on the same course last May, about 78 miles an hour.

According to the latest reports from Washington that clause in the urgent deficiency appropriation bill which is designed to put an end to the Commerce Court, has been as modified that the judges of this court will be retained as judges of the Circuit Courts, subject to assignment, by the chief justice of the Supreme Court, for duty in the Court of Appeals.

The arbitrators considering wages of conductors and trainmen have continued their hearings in New York iCty during the past week. John G. Walber, assistant to the third vice-president of the Baltimore & Ohio, has been on the stand two days, giving testimony concerning wages paid on different railroads. Testimony was also given by John McMullen, a brakeman of the Pennsylvania; Michael Sammon, a yard conductor of the same road, and F. L. Howard, a conductor of the Chicago, Indiana & Southern.

The Baltimore & Ohio has instructed enginemen and firemen to take special care to prevent locomotives around passenger stations from "popping off." A mother carrying an infant in her arms and looking after the safety of young children traveling with her, might be scared by a popping engine and drop the child. Again, the "commuter" dressed for a ball or theater party, hurrying along the platform might get an unwelcome vapor bath. All annoyances of this kind, says the press agent, are to be done away with.

The New York, New Haven & Hartford, announcing its new time table last Sunday, issued a statement showing how the through trains between New York and Boston are made a trifle slower in nearly every case. The fastest trains, running through, 234 miles, in five hours, will henceforth take five hours, ten minutes. Some of the fast trains between New York and Springfield, 136 miles, have been made 25 minutes slower. On lines where the block system is not in force the time interval between trains in all cases is at least ten minutes. A very few suburban trains have been taken off. Of two thousand passenger trains on the timetables, approximately two-thirds have been changed.

A conference regarding the proposed abolition of railway grade crossings in St. Louis was the subject of a conference held October 2 between representatives of the railways of the state, members of the Public Service Commission, the mayor of St. Louis, and the president of the board of public improvements. J. L. Harrop, engineer for the Public Service Commission, presented a report describing the principal grade crossings in the city which he recommended should be abolished as soon as possible. The railway men expressed a willingness to co-operate with the city and the state, but said there were not sufficient funds on hand to do all the work at once. They agreed to furnish plans and assist the commission. A further conference will be held on October 13, for detailed consideration of various plans.

A protest from organized labor, presented in the Chicago city council, caused a delay in the plans of the agitators for electrification last Monday. It had been planned to call up for passage the ordinance recommended by the committee on railway terminals during the summer, prohibiting the operation of trains by any power producing smoke or noxious gases, when the protest was received by the committee, signed by representatives of the conductors', engineers', firemen's, trainmen's and switchmen's organizations, who claimed to represent 58,500 voters, demanding that they be given a hearing before the subject was considered in the city council. As a result the ordinance was referred back to the committee. The employees declared that the ordinance would be unfair to them, would endanger the lives of railroad employees, and would cause many of them to lose their employment after the change from steam to electricity.

The presidents or other officers of fifteen Illinois railways attended a conference at Springfield on Saturday, October 4, with Governor Dunne and Chairman Berry of the Illinois Railroad and Warehouse Commission, to discuss means of reducing grade crossing accidents, particularly automobile accidents, in the state. The conference was called by the governor. The railway men promised their heartiest co-operation with the state administration on plans for improving the conditions at grade crossings, which will be taken up by the new public utilities commission, and all agreed to furnish a list of their most dangerous crossings. Track elevation was not especially considered, but most of the discussion was concerned with plans for eliminating hog-back and diagonal crossings with highways, which have proved especially dangerous since the rapid growth of automobile travel. While the railway men were unanimous in declaring that the present condition should be remedied, most of them placed a large part of the responsibility for accidents on the public and on automobile drivers. President Worthington of the Chicago & Alton, advocated a state law compelling all automobile drivers to bring their cars to a stop before crossing railway tracks. President Delano of the Wabash agreed with him, but thought that the roads themselves could materially improve the situation by eliminating diagonal crossings and removing obstructions to the view. J. P. Ramsey, president of the Chicago, Peoria & St. Louis, advocated the application of a portion of the state automobile tax revenue to the expense of removing grade crossings. Further regulation was also recommended for automobile drivers, on the ground that while chauffeurs are required to be examined and to hold proper licenses, the owners who may have had no experience may run their cars without regulation.

St. Paul Union Station Burnt Down.

This station, which was used by all railways entering the city, and was one of the city's landmarks, was almost completely destroyed by fire on the night of October 3. Negotiations between the railways and the city looking to the construction of a new station have been in progress for several years, without an agreement having been reached.

Oil Burning Locomotives Demanded in Massachusetts.

During the past ten years Massachusetts has been engaged in an eminently practical campaign to stimulate a general interest in the better management of forests. Lumber manufacturers have already begun to plant pines on their cut-over lands. Cape Cod towns sent a delegation of fifty to the forest fire hearing before the Public Service Commission on the petition of the state forester that the New York, New Haven & Hartford Railroad be required to use oil-burning locomotives in Barnstable county. It was proved to the satisfaction of the commission, so the chairman stated publicly at the close of the day, that the forest fire situation along the railroad on the Cape is critical. In the past six years there have been almost an even thousand fires in that region and 79 per cent. of these originated from the railroad. During the past season alone there were nearly 300 fires set by the locomotives. More than one resident testified that great as was the property damage, the nervous strain under which they lived in dry seasons was the more dreaded, and they would cheerfully submit to a raise of fares if that would enable the road to effectively prevent a recurrence.

Cape Cod's great resource today is its seaside summer colonies, attracted by the charm of the climate and the beauty of its coast. . . . Already many wide areas have been reduced by the fires to mere sand barrens. Even the worst of these wastes, however, are capable of reclamation, through forest planting, and the state stands ready to aid in their development, if, and only if the fire hazard, for which the railroad is mainly responsible, can be reduced in a reasonable degree. But the railroad says that to substitute oil for coal would add $80,000 a year to operating costs. The forester regards this figure as far too high, and if the cost of fires is properly cred-

ited, it is not impossible that the increase will wholly disappear. Even if it does cost more, if it shall appear to the commission that the burning of oil fuel is the remedy to apply in the interest of the community, it would seem to be its duty to order it carried out, and then, if need really exists, take the property owners at their word, and authorize the railroad to recoup by increasing its transportation charges.—*Boston Transcript.*

Railroad Men in the Legislature.

In the lower House of the North Carolina legislature last week there was read a report from the Corporation Commission, containing a list of members of the legislature and state officers who have railroad passes. The reading of the list led to many complaints and explanations, but it appears that the terms on which the holders of these passes enjoy the privilege are more or less legitimate, as is shown by the following explanatory statement:

Representatives W. C. Dowd, on account of advertising contracts for the *Charlotte News;* Walter Murphy, director of the Yadkin Railroad; R. F. Mintz, advertising contract *Mount Olive Tribune;* F. A. Woodard, local counsel Atlantic Coast Line and Norfolk Southern; J. Frank Ray, local counsel Southern Railway; J. A. Bolick, locomotive engineer Southern Railway; J. T. Foy, agent Scotts Hill station, Atlantic Coast Line; Dr. B. F. MacMillan, local surgeon Atlantic Coast Line, Red Springs; H. A. Page, general manager Bennettsville & Cheraw Railroad; C. R. Cofield, station agent Atlantic Coast Line; D. P. Dellinger, local counsel Seaboard Air Line; A. A. F. Seawell, special counsel Seaboard Air Line; W. H. Weatherspoon, local counsel Seaboard Air Line; Mark Majette, local counsel Norfolk Southern; R. L. Philips, local counsel Southern.

Senate.—A. D. Ivie, local counsel Southern Railway; J. P. Cook, secretary-treasurer North Carolina Railroad; A. T. Grant, local counsel Southern Railway; O. F. Mason, division counsel Southern Railway; George B. McLeod, director Raleigh & Charleston Railway; J. H. Bridgere, local counsel Seaboard Air Line; H. W. Stubbs, local counsel Atlantic Coast Line.

State Officers.—Dr. Joseph Hyde Pratt, state geologist, director State University Railroad; Hugh MacRae, of State Geological Board, director of North Carolina Railroad; State Auditor W. P. Wood, director of High Point, Randleman, Asheboro & Southern Railroad; Commissioner of Labor and Printing M. L. Shipman, advertising contract for French Broad Hustler; Corporation Commissioners required to be transported free by statute; T. G. Cobb, clerk of the House, on account of advertising contract for *News-Herald,* Morganton.

Wireless Telegraph Extensions.

Edward J. Nally, vice-president and general manager of the Postal Telegraph & Cable Company, and formerly for many years with the Western Union, has resigned and has taken a similar position with the Marconi Wireless Telegraph Company of America. The latter company has just made a contract with the Norwegian government for the erection of a wireless station in Norway, connecting with a station in Massachusetts. A chain of Marconi stations is being planned to give wireless service throughout the entire world. The company has bought land for the proposed station on the Massachusetts coast and plans to erect the duplex system, by which wireless messages can be received and sent at the same time. The operation of the system will be on the same plan as that to be employed between the station now building in New Jersey and the new station in England. The Norwegian government is making arrangements to connect with Sweden and Denmark. It is estimated that each wireless station will cost in the neighborhood of $500,000. The Marconi Company proposes to connect the United States with Honolulu by two stations to be erected in California at Bolinas and Marshalls. Contracts have been awarded to The J. G. White Engineering Corporation of New York for the construction of the receiving and sending stations in New Jersey, California and the Sandwich Islands.

President Worthington on the Closed Shop.

Organized labor has recently put up to the management of the railroad, the question of a closed shop at Bloomington. It is rather hard to conceive how these men reconcile a request of this nature with the rights which they demand for themselves—no discrimination in the employment of union labor. As a matter of fact, discrimination for or against union labor is unlawful, it is a moral crime—not that the railroad company wishes to discriminate against organized labor, for such is not the case. Organization, which has for its object the bettering of conditions, upbuilding and protecting, is worthy and honorable, and is welcomed by the railroad company because it is elevating; but labor, organized or not, can never gain a position of wholesome permanency by arbitrary methods of closed shop and limited output. There is work enough for all, that much is sure; and if the organization of labor is founded on proper principles, it will use every means to promote efficiency, it will take its feet out of the trough, and adopt more wholesome measures of protection which do not exclude the interests of the railroad itself. Otherwise organized labor, poor blind Samson shorn of a crowning glory, may rattle its chains and pull the temple down upon itself.—*From an address by President B. A. Worthington of the Chicago & Alton, at the dedication of the new passenger station at Bloomington, Ill.*

Trespass Laws More Needed Than Steel Cars.

The Bureau of Railway News and Statistics is distributing postal cards on which is printed, under the above caption, the following table of fatalities charged to United States railways in 23 years, 1890 to 1912, inclusive:

	Killed.	Per Cent.
Trespassers	103,566	53.8
Employees through their own fault or mischance	40,497	25.7
Other persons through their own fault or mischance	18,328	9.5
Employees in accidents to trains	(a)13,630	7.1
Passengers through their own fault or mischance	4,219	2.2
Passengers in accidents to trains	3,302	1.7
Total for 23 years	192,542	100.0
Analysis.		
Through their own fault or mischance	175,610	91.2
In accidents to trains	16,932	8.8

(a) Of these, at least 50 per cent. are due to the negligence or carelessness of the victim.

"So long as legislators, commissions and critics rivet their attention on steel cars, which may cause, but never avert, a collision or derailment, the tale of railroad fatalities will grow along the line of the greatest percentage of causes," says the bureau.

Safety First Meeting Illinois Central Time Service Department.

A "Safety First" meeting of the time service department of the Illinois Central and Yazoo & Mississippi Valley was held at the Stratford Hotel, Chicago, on September 8 and 9. The meeting was presided over by Webb C. Ball, general time inspector. Various question of mutual interest to the company and the inspectors were discussed, having in mind the betterment of the time service, such as the changing of the time of inspections and a more rigid enforcement of the weekly comparisons and efficiency tests to ascertain whether or not employees have in their possession of all times weekly comparison cards. A permanent organization of the authorized local watch inspectors of the Illinois Central system was effected.

Among the points taken up was the subject of establishing a uniform price for standard watch repairing and the importance of allowing no one but reliable watchmakers to handle employees' watches. A schedule was presented, voted on and passed. Mr. Ball in remarking on this said in part, "The spirit we want to inculcate in the minds of railroad men is that when they come to a railroad watch inspector, they are getting the best it is possible to obtain. The watchmakers selected by the railroad company for this work are the best in the profession. When a railroad man leaves his watch for repair, with a local watch inspector he secures a standard loaner watch, which he is given to carry free of charge while his watch is being taken care of. These loaner watches meet the requirements of the time service and are the investment of the local watch inspector and are given just as careful rating and attention as the employee's own watch. The figures showing the number of these watches being carried in service, loaned by the local watch inspector each month, are really remarkable."

It was unanimously agreed that standard plain dials be adopted for use on all railroad standard watches, and that all fancy dials with a circle of marginal signs or other "freak" designs be con-

demned as being unreliable and unsafe for railroad service

The inspectors also went on record as condemning the practice of placing pictures on watch dials or crystals. The meeting closed with general discussion of the rules now in effect, and a long talk by Mr. Ball, giving instructions to the inspectors as to the proper handling of the service. The arrangements for the meeting were carried out by W. F. Hayes, assistant general time inspector, through instructions issued by T. J. Foley, general manager of the Illinois Central, and Webb C. Ball, general time inspector.

Railway Fire Protection Association.

The Railway Fire Protection Association was organized at a meeting held in Chicago on Tuesday and Wednesday of this week with forty members. The officers elected were: President, E. F. Elmore, superintendent of insurance of the Southern at Washington, D. C.; vice-president, Paul Hevener, assistant supervisor of the insurance fund of the Rock Island at Chicago; secretary-treasurer, C. B. Edwards, fire insurance agent of the Mobile & Ohio at Mobile, Ala. A full report of the meeting with an abstract of the papers presented will be published next week.

Canadian Railway Club.

At the monthly meeting of the Canadian Railway Club, to be held at the Windsor hotel, October 14, a lecture will be delivered by R. F. Uniacke, bridge engineer, National Transcontinental Railway, entitled Construction Work on the National Transcontinental Railway. This lecture will be illustrated by stereopticon views.

MEETINGS AND CONVENTIONS.

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass. Next convention, May, 1914.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Boston, Mass. Convention, May 19, 1914, St. Louis.

AMERICAN ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS.—W. C. Hope, New York. Annual meeting, October 14-15, Philadelphia, Pa.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, East St. Louis, Ill. Next convention, April 21, Houston, Tex.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—E. H. Harman, St. Louis, Mo.; 3d Thursday and Friday in May.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—H. C. Donecker, 29 W. 39th St., New York. Next convention, October 13-17, Atlantic City, N. J.

AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOC.—H. G. McConnaughy, 165 Broadway, New York. Meetings with Am. Elec. Ry. Assoc.

AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 75 Church St., New York. Next meeting, November 19, 1913, Chicago.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Convention, October 21-24, 1913, Montreal.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, 900 S. Michigan Ave., Chicago. Next convention, March 17-20, Chicago.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—A. R. Davis, Central of Georgia, Macon, Ga.

AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—C. W. Hunt, 220 W. 57th St., New York; 1st and 3d Wed., except June and August, New York.

AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.—J. R. Wenlinger, 11 Broadway, New York; 2d Tuesday of each month, New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Baltimore, Md. Next convention, January 20-22, 1914, New Orleans, La.

ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—C. G. Phillips, 143 Dearborn St., Chicago. Annual meeting, May 28, Atlantic City, N. J.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—C. W. Egan, B. & O., Baltimore, Md. Next convention, May, 1914, St. Paul, Minn.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W. Ry., Chicago. Annual convention, October 18-24, Chicago.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, 112 West Adams St., Chicago. Next convention, May 20-23, New Orleans, La.

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 75 Church St., New York. Next meeting, December 9-10, Galveston, Tex.

ASSOCIATION OF WATER LINE ACCOUNTING OFFICERS.—W. R. Evans, Chamber of Commerce, Buffalo, N. Y.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—H. A. Neally, Joseph Dixon Crucible Co., Jersey City, N. J. Meeting with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 2d Tuesday in month, except June, July and Aug., Montreal.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 413 Dorchester St., Montreal, Que.; Thursday, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 North 50th Court, Chicago; 2d Monday in month, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Thurs. in Jan. and 2d Fri. in March, May, Sept., Nov., Buffalo, N. Y.

CIVIL ENGINEERS' SOCIETY OF ST. PAUL.—L. S. Pomeroy, Old State Capitol building, St. Paul, Minn.; 2d Monday, except June, July, August and September, St. Paul.

ENGINEERS' SOCIETY OF PENNSYLVANIA.—E. R. Dasher, Box 704, Harrisburg, Pa.; 1st Monday after second Saturday, Harrisburg, Pa.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—E. K. Hiles, Oliver building, Pittsburgh; 1st and 3d Tuesday, Pittsburgh, Pa.

FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Richmond, Va. Next convention, May 20-22, Galveston, Tex.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—E. S. Koller, 226 W. Adams St., Chicago; Wed. preceding 3d Thurs., Chicago.

INTERNATIONAL RAILWAY CONGRESS.—Executive Committee, 11, rue de Louvain, Brussels, Belgium. Convention, 1915, Berlin.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. G. Hall, 922 McCormick building, Chicago. Annual convention, May 18-22, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 829 West Broadway, Winona, Minn. Next convention, July, Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, Lima, Ohio. Next convention, third Tuesday in August.

MAINTENANCE OF WAY & MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—W. G. Wilson, Lehigh Valley, Easton, Pa. Next convention, November 18-20, Louisville, Ky.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York.

MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago.

MASTER CAR & LOCOMOTIVE PAINTERS' ASSOC. OF U. S. AND CANADA.—A. P. Dane, B. & M., Reading, Mass.

NATIONAL RAILWAY APPLIANCE ASSOC.—Bruce V. Crandall, 537 So. Dearborn St., Chicago. Meetings with Am. Ry. Eng. Assoc.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass.; 2d Tuesday in month, except June, July, Aug. and Sept., Boston.

NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York; 3rd Friday in month, except June, July and August, New York.

NORTHERN RAILROAD CLUB.—C. L. Kennedy, C., M. St. P., Duluth, Minn.; 4th Saturday, Duluth.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, Union Station, Peoria; 2d Thursday.

RAILROAD CLUB OF KANSAS CITY.—C. Manlove, 1008 Walnut St., Kansas City, Mo.; 3d Friday in month, Kansas City.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 2 Rector St., New York. Annual dinner, second week in December, 1913, New York.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Penna. R. R., Pittsburgh, Pa.; 4th Friday in Month, except June, July and August, Pittsburgh.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOC.—J. Scribner, 1021 Monadnock Block, Chicago. Meetings with Assoc. Ry. Elec, Engrs.

RAILWAY FIRE PROTECTION ASSOCIATION.—C. B. Edwards, Mobile & Ohio, Mobile, Ala. Next meeting, October 7, Chicago.

RAILWAY GARDENING ASSOCIATION.—J. S. Butterfield, Lee's Summit, Mo.

RAILWAY DEVELOPMENT ASSOCIATION.—W. Nicholson, Kansas City Southern, Kansas City, Mo. Next meeting, November 11-12, Baltimore, Md.

RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Bethlehem, Pa. Convention, October 14, Nashville, Tenn.

RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, Box C, Collinwood, Ohio.

RAILWAY SUPPLY MANUFACTURERS' ASSOC.—J. D. Conway, 2135 Oliver bldg., Pittsburgh, Pa. Meetings with M. M. and M. C. B. Assocs.

RAILWAY TEL. & TEL. APPLIANCE ASSOC.—W. E. Harkness, 284 Pearl St., New York. Meetings with Assoc. of Ry. Teleg. Sups.

RICHMOND RAILROAD CLUB.—F. O. Robinson, Richmond, Va.; 2d Monday except June, July and August.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—L. C. Ryan, C. & N. W., Sterling, Ill.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug., St. Louis.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmonds, 3868 Park Ave., New York. Meeting with annual convention Railway Signal Association.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—C. Nyquist, La Salle St. Station, Chicago.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P Ry., Montgomery, Ala. Annual meeting, October 16, 1913, Atlanta, Ga.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant bldg., Atlanta, Ga.; 3d Thurs., Jan., March, May, July, Sept., Nov., Atlanta.

TOLEDO TRANSPORTATION CLUB.—J. G. Macomber, Woolson Spice Co., Toledo, Ohio; 1st Saturday, Toledo.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillsburn, N. Y. Meeting with Roadmasters' and Maintenance of Way Association.

TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 290 Broadway, New York; last Tuesday in month, except June, July and August, New York.

TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Erie, Pittsburgh, Pa.; meetings monthly, Pittsburgh.

TRAFFIC CLUB OF ST. LOUIS.—A. F. Versen, Mercantile Library building, St. Louis, Mo. Annual meeting in November. Noonday meetings October to May.

TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7122 Stewart Ave., Chicago. Next convention, June 16, Jacksonville, Fla.

TRANSPORTATION CLUB OF BUFFALO.—J. M. Sells, Buffalo; first Saturday after first Wednesday.

TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, L. S. & M. S., Detroit, Mich.; meetings monthly.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R., East Buffalo, N. Y. Next meeting, Chicago.

UTAH SOCIETY OF ENGINEERS.—Fred D. Ulmer, Oregon Short Line, Salt Lake City, Utah; 3rd Friday of each month, except July and August.

WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, P. O. Box 1707, Winnipeg, Man.; 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, Old Colony building, Chicago; 3d Tuesday of each month, except June, July and August.

WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, 1735 Monadnock Block, Chicago; 1st Monday in month, except July and August, Chicago.

Traffic News.

The Sunset-Central Lines are to be added to the list of railroads which print a monthly bulletin for the benefit of station agents. The first number, dated September 1, has been issued by the Traffic Department of the Sunset-Central Lines, Houston, Tex.

The Federal Court has ordered the Central of Georgia and the Western of Alabama to establish passenger rates in the State of Alabama, beginning October 20, on the basis of 2½ cents a mile, in accordance with the order of the state authorities. The present fares are based on a rate of three cents a mile.

A company has been organized in Augusta, Ga., to operate a line of steel barges on the Savannah river from Augusta to Savannah. The company was formed as a result of interviews with Col. Kingman, United States engineer, in which he warned the business interests of Augusta that unless more use could be made of the Savannah river between Savannah and that city, federal appropriations for its improvement probably would be cut off.

The annual report of the United States Express Company for the year ended June 30, last shows gross earnings of $21,620,710, an increase of $701,727 over the preceding year. Because of greater operating expenses, however, there was an operating deficit for the year of $109,512, as compared with a deficit the previous year of $61,012 After adding other income and deducting $24,280 for miscellaneous expenses there remained a balance applicable to dividends of $232,038.

At a meeting of the Transcontinental Passenger Association, held in Chicago last week, the question of rates to the Panama Exposition to be held in San Francisco in 1915 was deferred, after considerable discussion, to be considered at the next meeting, in San Francisco, in March. It was decided that whatever rate should be made for the Exposition would be the lowest rate made that year for conventions on the Pacific coast. A new standing committee was appointed to which will be referred controversies regarding rates and divisions, and the question of proposed changes of clergy fares was referred to a committee. A recommendation was adopted in favor of abolishing the practice of parking cars during conventions.

The Department of Agriculture is making tests and inspections of 10 carloads of dried fruit being transported from Los Angeles to New York, Washington and other cities of the East, to furnish data for the Bureau of Chemistry to guide the Bureau in drafting regulations for the new net weight law, which requires that the quantity of the contents be plainly indicated on the outside of every package of food. The tests with the dried fruit are to determine the amount of shrinkage which takes place in transit from the Pacific to the Atlantic Coast. Certain products will lose weight when shipped from where the climate is moist to a dry place. Some crates of macaroni recently shipped to Denver and Arizona, lost weight, while those sent to New Orleans, San Francisco and Seattle gained, owing to moisture in the air.

In the United States Court for the Southern District of Texas, at Galveston, October 1, Judge Waller T. Burns presiding, after an all day hearing made permanent the temporary injunction granted by Judge Burns at Houston, restraining ten steamship companies and agents from making certain notations on bills of lading for cotton to be exported. Under the agreed judgment entered, bills of lading for cotton must hereafter bear printed on them as a part of the agreement the words "received in apparent good order —— bales of cotton baled in the usual American method," and where other damage is noted, the bills must bear in writing on their face a description of the specific damage and the number of bales so damaged. The injunction restrains the use of such notations as "not thoroughly covered," "subject to damage," "soiled more or less," "insufficient covering."

Car Balance and Performance.

Arthur Hale, chairman on the committee on relations between railroads of the American Railway Association, in presenting

CAR BALANCE AND PERFORMANCE IN JUNE, 1913.

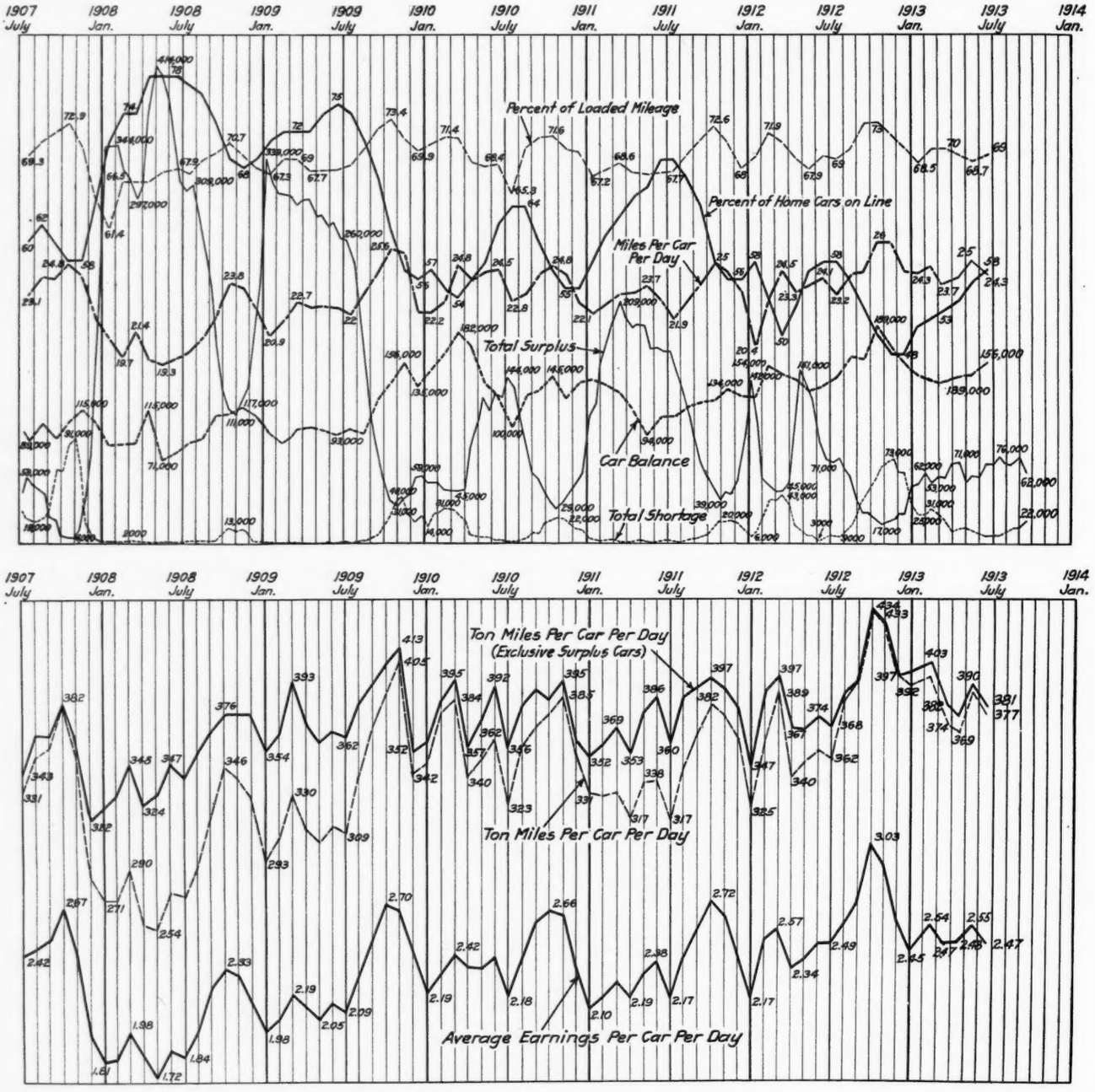
	New England.	N. Y., N. J., Del., Md., Eastern Pa.	Ohio, Ind., Mich., Western Pa.	Va., W. Va., No. and So. Carolina.	Ky., Tenn., Miss., Ala., Ga., Fla.	Iowa, Ill., Wis., Minn.	Mont., Wyo., Neb., Dakotas.	Kan., Colo., Okla., Mo., Ark.	Texas, La., New Mex.	Ore., Idaho, Nev., Cal., Ariz.	Canadian Lines.	Grand Total.
Revenue freight cars owned	89,845	689,701	218,603	189,287	172,793	438,498	17,970	145,246	30,574	136,801	136,113	2,265,431
Average number of system cars on line	42,841	380,887	130,262	100,614	84,783	304,022	5,960	76,088	20,064	71,149	94,300	1,310,970
Railway-owned cars: Average foreign on line	49,284	314,723	122,055	74,930	70,439	147,915	8,275	59,191	19,571	40,376	41,801	948,560
Total Railway-owned cars on line	92,125	695,610	252,317	175,544	155,222	451,937	14,235	135,279	39,635	111,525	136,101	2,259,530
Excess	2,280	5,909	33,714	*13,743	*17,571	13,439	*3,735	*9,967	9,061	*25,276	*12	*5,901
Per cent. of cars on line to total owned:												
Home	48	55	59	53	49	69	33	52	66	52	69	58
Foreign	55	46	56	40	41	34	46	37	64	30	31	42
All railways	103	101	115	93	90	103	79	89	130	82	100	100
Private cars on line	3,744	36,957	10,728	4,963	10,136	15,328	1,609	8,561	3,907	12,907	2,717	111,557
Total, all cars on line	95,869	732,567	263,045	180,507	165,358	467,265	15,844	143,840	43,542	124,432	138,818	2,371,087
Per cent. of cars in shop	6.64	5.88	9.88	8.50	11.07	5.47	7.89	9.06	7.73	6.39	4.44	7.09
No. of freight engines owned	1,454	10,446	3,177	3,484	2,934	7,103	509	2,924	877	2,829	2,272	38,009
Average cars on line per freight engine owned	66	70	83	52	56	66	31	49	50	44	61	62
Total freight-car mileage	55,589,318	532,818,456	170,436,412	142,272,790	132,207,286	321,868,374	22,660,561	93,354,307	33,801,458	111,464,299	103,826,093	1,720,299,354
Average mileage per car per day	19.3	24.2	21.6	26.3	27.0	22.8	49.2	22.7	25.9	29.9	24.9	24.3
Per cent. loaded mileage	73.3	66.5	68.1	65.2	69.0	71.8	78.3	69.7	65.8	70.2	74.0	69.0
Ton-miles of freight, including company freight	643,341,624	8,782,667,719	3,010,769,913	2,293,226,242	1,857,066,539	3,645,674,374	389,727,398	1,291,694,441	398,434,943	1,603,936,983	1,531,409,516	25,447,949,592
Average ton-miles, including company freight:												
Per car-mile	11.6	16.5	17.7	16.1	14.2	14.7	17.7	13.8	11.8	14.6	14.7	15.5
Per loaded car-mile	15.8	24.8	26.0	24.7	20.7	20.1	22.6	19.8	17.9	20.9	19.9	22.5
Per car per day	224	400	383	423	385	334	872	314	305	437	368	377
Gross freight earnings	6,658,273	51,138,061	15,685,117	12,422,869	11,807,038	34,156,041	2,905,808	10,730,755	3,326,718	16,219,828	10,437,966	175,488,474
Average daily earnings: Per car owned	2.47	2.47	2.39	2.19	2.28	2.60	5.39	2.41	3.63	3.95	2.56	2.58
Per railroad car on line	2.41	2.45	2.07	2.36	2.54	2.52	6.80	2.71	2.80	4.85	2.56	2.59
All cars on line	2.32	2.33	1.99	2.29	2.38	2.44	6.11	2.56	2.55	4.35	2.51	2.47

*Denotes deficiency.

statistical bulletin No. 154, covering car balances and performances for June says:

The miles per car per day for June were 24.3, compared with 25.0 in May. This figure for June, 1912, was 24.1.

Ton miles per car per day for June were 377, compared with 387 in May. This is an increase of 3.01 per cent. over the figure for June, 1912, which was 366.



Freight Car Mileage, Earnings and Performance, 1907 to 1913.

The proportion of home cars on line increased two points to 58 per cent. in June, 1913. This figure was the same in June, 1912.

The per cent. of loaded car mileage increased from 68.7 per cent. in May to 69.0 per cent. in June, 1913. This figure for June, 1912, was 69.3 per cent.

The average earnings per car per day for all cars on line decreased 8 cents to $2.47 in June, 1913. This figure for June, 1912, was $2.49.

The accompanying table gives the car balance and performance in the months covered by the report, and the diagram shows car earnings and car mileage and different car performance figures monthly from July, 1907.

Making a Date with the Public.

The Long Island Railroad, desiring to give patrons the best service possible, and to meet all reasonable criticisms, announces that a special committee of officers has been appointed to meet patrons, who have suggestions or criticisms to make, regularly on the first and third Wednesdays of each month at 9 a. m., in the office of the General Superintendent at Jamaica. It is requested that suggestions or criticisms be made in writing and that they be sent in at least three days prior to the date of the meeting, and that the writer or a representative be present at the meeting.

Revenues and Expenses of Large Roads for August.

The following figures were compiled by the Interstate Commerce Commission from monthly reports of operating revenues and expenses of large steam roads for the month of August, 1913, received up to October 3. No reports are included for roads whose operating revenues for the year ended June 30, 1913, did not reach $1,000,000. The figures are compiled as ren-

dered and should not be considered final, inasmuch as close scrutiny of the reports may lead to their modification before acceptance.

The commission has suspended from October 3, until April 3, the item in a supplement to the tariff of the Chicago & North Western, which contains advanced rates for the transportation

REVENUES AND EXPENSES OF LARGE STEAM ROADS.

Item.	United States. 1913.	United States. 1912.	Eastern District. 1913.	Eastern District. 1912.	Southern District. 1913.	Southern District. 1912.	Western District. 1913.	Western District. 1912.
Number of reports included...	103		48		26		29	
			MONTH OF AUGUST.					
Average number of miles operated	136,888.97	135,519.68	38,638.90	38,388.72	37,213.24	37,045.02	61,036.83	60,085.34
Total operating revenues	$178,821,018	$176,704,379	$89,178,211	$87,811,898	$33,383,111	$32,821,915	$56,259,696	$56,070,566
Total operating expenses	123,552,166	113,806,583	61,761,457	56,002,883	24,561,070	23,076,898	37,229,639	34,726,807
Net operating revenue	55,268,852	62,897,791	27,416,754	31,809,015	8,822,041	9,745,017	19,030,057	21,343,759
Revenue per mile	1,306	1,303	2,308	2,287	897	886	922	933
Expenses per mile	902	839	1,598	1,458	660	623	610	578
Net revenue per mile	404	464	710	829	237	203	312	355
			TWO MONTHS ENDING WITH AUGUST.					
Average number of miles operated	136,879.06	135,403.00	38,641.95	38,384.87	37,212.26	37,034.34	61,024.35	59,983.79
Total operating revenue	$350,493,550	$339,704,968	$175,017,208	$168,685,216	$65,537,598	$63,617,447	$109,938,744	$107,402,305
Total operating expenses	244,727,950	223,907,601	122,586,430	109,815,375	48,532,628	45,913,350	73,608,892	68,178,876
Net operating revenue	105,765,600	115,797,367	52,430,778	58,869,841	17,004,970	17,704,097	36,329,852	39,223,429
Revenue per mile	2,561	2,509	4,529	4,395	1,761	1,718	1,802	1,791
Expenses per mile	1,738	1,654	3,172	2,861	1,304	1,240	1,205	1,137
Net revenue per mile	773	855	1,357	1,534	457	478	596	654

COMPARATIVE FIGURES BASED ON ALL ROADS HAVING REVENUES ABOVE $1,000,000 PER ANNUM REPORTING FOR AUGUST, 1912.

For the month:	1912.	1911.	1912.	1911.	1912.	1911.	1912.	1911.
Average number of miles operated	220,463.60	218,224.80	57,932.46	57,483.54	41,471.67	41,078.29	121,059.47	119,662.97
Revenue per mile	$1,217	$1,119	$2,117	$1,928	$892	$844	$898	$824
Expenses per mile	780	726	1,351	1,233	632	583	558	531
Net revenue per mile	437	393	766	695	260	261	340	293
For two months:								
Average number of miles operated	220,282.34	218,173.51	57,929.16	57,474.64	41,458.02	41,071.96	120,895.16	119,626.91
Revenue per mile	$2,336	$2,144	$4,049	$3,681	$1,730	$1,631	$1,723	$1,581
Expenses per mile	1,534	1,424	2,648	2,417	1,255	1,144	1,096	1,044
Net revenue per mile	802	720	1,401	1,264	475	487	627	537

Car Location.

The accompanying table, which was taken from bulletin No. 10 of the American Railway Association, gives a summary of freight car location by groups on September 1, 1913.

of condensed or evaporated milk when shipped in glass or stoneware packed in barrels, boxes or crates; in bulk in kits, kegs or barrels; in cans, jacketed, or in railroad shipping cans, straight or mixed carloads, between points in Illinois and Wisconsin.

CAR LOCATION ON SEPTEMBER 1, 1913.

	New England.	N.Y., N.J., Del., Md., Eastern Pa.	Ohio, Ind., Mich., Western Pa.	Va., W. Va., No. & So. Carolina.	Ky., Tenn., Miss., Ala., Ga., Fla.	Iowa, Ill., Wis., Minn.	Mont., Wyo., Neb., Dakotas.	Kans., Colo., Okla., Mo., Ark.	Texas, La., New Mexico.	Oregon, Idaho, Nev., Cal., Ariz.	Canadian Lines.	Grand Total.
Total Cars Owned	88,036	683,033	272,475	203,698	165,342	479,896	16,733	130,894	30,371	133,314	139,299	2,343,091
Home Cars on Home Roads	44,793	396,062	105,657	108,115	83,596	332,662	5,433	66,537	13,947	77,772	95,913	1,330,487
Home Cars on Foreign Roads	43,243	286,971	166,818	95,583	81,746	147,234	11,300	64,357	16,424	55,542	43,386	1,012,604
Foreign Cars on Home Roads	48,645	300,962	209,556	73,081	68,059	190,419	9,369	67,374	24,140	54,773	42,315	1,088,693
Total Cars on Line	93,438	697,024	315,213	181,196	151,655	523,081	14,802	133,911	38,087	132,545	138,228	2,419,180
Excess or Deficiency	5,402	13,991	42,738	*22,502	*13,687	43,185	*1,931	3,017	7,716	*769	*1,071	76,089
Surplus	1,261	5,046	1,416	6.015	1,934	15,925	453	9,977	1,696	14,585	15,268	73,576
Shortage	387	1,347	2,554	4,269	2,149	1,826	62	413	79	694	1,459	15,239
Shop Cars—												
Home Cars in Home Shops	6,521	41,580	21,543	13,452	15,827	25,492	658	10,196	2,702	6,063	4,663	148,697
Foreign Cars in Home Shops	1,164	8,215	6,840	1,990	2,028	4,931	484	2,183	980	2,347	423	31,585
Total Cars in Shops	7,685	49,795	28,383	15,442	17,855	30,423	1,142	12,379	3,682	8,410	5,086	180,282
Per Cent. to Total Cars Owned—												
Home Cars on Home Roads	50.88	57.98	38.77	53.08	50.56	69.32	32.47	50.83	45.92	58.33	68.85	56.78
Total Cars on Line	103.48	102.05	115.59	88.95	91.72	109.00	88.46	100.81	125.41	99.42	99.23	103.25
Home Cars in Home Shops	7.41	6.09	7.91	6.60	9.57	5.65	3.93	7.79	8.89	4.55	3.35	6.42
Foreign Cars in Home Shops	.99	1.20	2.51	.98	1.97	1.09	2.89	1.53	3.23	1.76	.30	1.37
Total Cars in Shops	8.40	7.29	10.42	7.58	11.54	6.74	6.82	9.32	12.12	6.31	3.65	7.79

*Denotes deficiency.

INTERSTATE COMMERCE COMMISSION.

The St. Louis Cotton Exchange has filed a complaint with the Interstate Commerce Commission charging discrimination against the St. Louis market in the rates on cotton from Oklahoma points.

Frank McManamy, assistant chief inspector of boilers, under the Interstate Commerce Commission, has been nominated by President Wilson for the position of chief inspector, in place of J. F. Ensign, deceased.

The commission has suspended from October 4 until April 4 the items in a supplement to Agent F. A. Leland's and Agent Eugene Morris' tariffs which proposed to advance rates on packing house products originating at or destined to points in Arkansas, Louisiana and Oklahoma by the withdrawal of fourth class rating thereon.

The commission has suspended from October 8 until April 8 the schedules in supplements to certain tariffs which contain advanced rates for the transportation of brooms, C. L., from Chicago and Peoria, Ill., St. Paul, Minn., etc., Missouri River points and points in Mississippi River territory to Denver, Col., and points taking same rates.

The commission has suspended from October 3, until April 3, the item in a supplement to the tariff of the Chicago & North Western, which advances the rate on paper, c. l., from Milwaukee and Manitowoc, Wis., to Kaukauna, Wis., which rate is one of the factors employed in making through rates to the latter point from certain points in the East.

The commission has suspended until January 28, the items in certain tariffs which contain proposed advances in rates on lumber in carloads from San Francisco and other points in California to points in Texas and New Mexico north of El Paso,

Texas. The present rate to most of these points is 40 cents, and the proposed rate is 50 cents per 100 lbs.

The commission has suspended from October 10 until January 29 the supplement to the tariff of the Carolina, Clinchfield & Ohio, which proposed to effect advances in class and commodity rates from St. Paul, Va., to Atlanta, Ga., and other southern points similar to those contained in schedules of other carriers, the operation of which was suspended by an order previously entered in the same docket.

The commission has suspended from October 1 until January 29 the schedules contained in certain tariffs, which proposed advances in class and commodity rates from Richmond, Norfolk, Lynchburg, Roanoke, Va., and other points taking Virginia cities rates to Vicksburg, Miss.; Montgomery, Ala.; Macon, West Point, Atlanta, Ga., and other southern points. The advance in class rates amount to as much as 7 cents per 100 lbs. in some instances.

The commission has suspended from October 2 until January 30 the item in a supplement to Agent F. A. Leland's tariff, which contains proposed advances in rates on cotton seed hulls, in carloads, from Beaumont, East Beaumont and Houston, Tex., to New Orleans and other points in Louisiana located on the New Orleans, Texas & Mexico. These advances range from one-half to four and a half cents per 100 lbs. The present rate to New Orleans, for example, is 8.5 cents and the proposed rate is 13 cents per 100 lbs.

The commission has suspended until January 28 certain tariff items. Under present tariff provisions gasolene engines, and parts, may be included with shipments of wind mills and wind mill parts and forwarded in mixed carloads at a commodity rate of $1.50 per 100 lbs., from Chicago to San Francisco and other California terminals. The suspended items propose to continue in effect the rate above stated upon shipments of wind mills and wind mill parts, in carloads, but do not permit gasolene engines to be forwarded in the same car at that rate. The carload rate on the latter from Chicago is $1.40 per 100 lbs., and the less carload rate is $3.40 per 100 lbs. Shipments from other points would be effected in a like manner.

The commission has suspended from September 30 until January 28 certain items in certain tariffs. Transcontinental tariffs naming commodity rates on shipments of butter, eggs and other dairy products from points in Nebraska, Kansas and other states to the Pacific coast provide that such rates include the privilege of concentration and storage under rules and regulations published in tariffs of the individual lines parties to such commodity rates. The suspended items provide for the withdrawal of this privilege, which would result in material advances through the application of local rates from points of origin to the concentration or storage point plus the tariff rate to final destination.

STATE COMMISSIONS.

The California Railroad Commission has issued an order that when freight cars are loaded to physical capacity with any article for which a carload rate is provided, except articles with a minimum carload weight of 24,000 lbs. or less, charges shall be based only on actual weight.

The railroad commissioners of South Dakota have issued an order requiring that on all shipments of freight passing over two or more roads, the rate on each road must be not more than 80 per cent. of the local rate; and at junction points where there are track connections there must be no charge for switching.

Edward F. Boyle has been appointed by the Public Service Commission of New York, for the First district, as Special Examiner, at an annual salary of $6,000. Mr. Boyle is a lawyer and accountant, and until recently had been chief of the executive staff in the office of the president of the board of aldermen. Prior to that time he had held various positions in the office of the Commissioner of Accounts for New York City.

Following a hearing at Chicago on October 1, the Illinois Railroad and Warehouse Commission announced its intention of ordering a schedule of rules governing switching rates and practices to apply in the state generally, with the exception of Chicago and East St. Louis, which have special rules. At a conference between representatives of the railways and the shippers at the hearing it was agreed to appoint a committee of ten members—five shippers and five railway men—to formulate a tentative set of rules to be submitted to the commission.

The Oklahoma Corporation Commission has ordered the Wichita Falls & Northwestern to put two-cent passenger fares in effect on its line by October 15 for a four months' test. The company at a hearing before the commission objected on the ground that the two-cent rate would not yield a compensatory revenue, and a question was raised as to the relations of the company to the Missouri, Kansas & Texas. The commission held that the line should be considered as part of the Missouri, Kansas & Texas instead of as an independent line.

The New Jersey public utility commissioners have refused to approve a proposed 99-year lease of the property and franchises of the Lehigh Valley Railroad Company of New Jersey to the Lehigh Valley Railroad Company of Pennsylvania. The New Jersey company, either of itself or through subsidiary corporations, owns about 94 miles of railroad in New Jersey, operated by the Lehigh Valley, which owns all of the stock of the New Jersey corporation. The commissioners saw no objection to the approval of the lease, but they held that, under the law, they had no power to approve it.

The Supreme Court of Oklahoma has sustained an order of the Corporation Commission of that state, requiring ticket windows at railroad stations to be opened for a period of one hour before the departure of passenger trains. It appears that this decision refers to a case that arose in 1910. The roads of the state changed from the two to the three-cent passenger fare at midnight, March 9, 1910. A train of the Atchison, Topeka & Santa Fe was due at Avard at 12:20 a. m., and had the commission's order been obeyed passengers would have been able to purchase tickets at the two-cent rate; but the ticket office was not opened until ten minutes before the train was due to leave, and, according to the complaint, passengers were forced to purchase at the three-cent rate. The commission fined the Santa Fe $500, and on the company's appeal the commission was sustained.

COURT NEWS.

Oregon Rate Law Declared Invalid.

The Oregon rate law adopted by the people of the state under the initiative at the general election last November, which prescribed a percentage relationship between the classification ratings of freight and minimum carload weights, has been declared unconstitutional by three judges of the United States court at Portland, Oregon. A temporary injunction issued several months ago on application of the Hill and Harriman lines was made permanent. The decision was given by Judge Wolverton, who declared the act was not only violative of the right of the carrier to manage its own affairs and exercise its own judgment respecting the spread between carload and less than carload rates, but would compel the carriers in many instances to accept unreasonably low rates in order to comply with its provisions and avoid criminal prosecution. The court also declared that the first three sections of the act are irreconcilable and wholly incongruous, and that the act is an attempt under the guise of the exercise of the police power of the state to make exceptions in favor of particular places and communities.

"We do not deny," said the court, "that the legislature, the people, or the railroad commission may determine and adopt a reasonable spread as applied to specific commodities and for the protection of given localities; but that is a very different question from one arising from an edict that a certain definite and rigid spread shall be applied to all commodities, whatsoever may be their kind or character, origin of shipment or destination. Indeed, the act would seem to defeat itself. It will either compel the carrier to accept unreasonably low rates on carloads lots as respects some commodities, which would be unjust and confiscatory, or to fix unreasonably high rates on less than carload lots, which the law will not permit, in order to adjust the carload rates within the maximum relative rates for minimum carload weights; or it might constrain the carrier in order to afford the public a very low rate on commodities that would justify it to carry the same commodities less than carload at an unreasonably low rate."

REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF AUGUST, 1913.

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Net operating revenue (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance										
		Freight.	Passenger.	Total, inc. misc.	Way and structures.	Of equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	143	$91,655	$46,958	$150,563	$21,499	$36,267	$3,597	$52,279	$5,601	$119,243	$31,320	—$353	$7,450	$23,517	—$8,101
Arizona & New Mexico	109	72,694	9,454	85,738	14,515	8,221	671	15,886	2,631	41,924	43,814	.....	3,400	40,414	—16,145
Arizona Eastern	367	154,760	37,766	203,788	29,384	32,533	2,140	64,780	11,740	140,577	63,211	57	11,396	51,872	—39,805
Atchison, Topeka & Santa Fe	8,358	5,372,767	2,181,847	8,143,757	1,286,654	1,433,471	167,294	2,223,690	191,497	5,302,606	2,341,151	.....	376,189	2,464,962	—78,616
Atlanta, Birmingham & Atlantic	645	168,435	66,705	254,853	44,389	47,839	12,921	102,877	10,607	218,633	36,220	.....	14,337	21,883	—12,265
Atlantic & St. Lawrence	167	83,230	38,120	131,830	24,777	17,922	3,777	53,987	53,986	103,979	27,851	.....	10,157	17,694	49,303
Atlantic City	167	71,601	353,060	441,328	24,877	13,101	7,156	154,113	1,690	200,937	240,391	—4,005	9,000	227,386	43,311
Atlantic Coast Line	4,617	1,455,920	695,699	2,331,716	435,852	472,037	52,634	956,175	105,497	2,022,195	309,521	.....	132,000	177,521	—248,950
Bangor & Aroostook	631	148,202	67,280	228,439	44,583	39,245	2,438	82,753	10,472	179,491	48,948	134	9,757	39,325	—19,316
Belt. Ry. Co. of Chicago	21	.....	.....	253,964	20,328	31,914	559	99,844	5,661	158,306	95,658	.....	9,756	85,902	—25,096
Bessemer & Lake Erie	204	961,809	61,397	1,036,433	85,910	154,656	9,527	225,797	11,218	487,108	549,325	.....	38,000	511,325	—59,294
Boston & Maine	2,252	2,355,599	1,902,540	4,580,644	608,423	641,641	34,279	1,814,221	95,142	3,193,706	1,386,938	30,072	166,221	1,250,789	—152,727
Buffalo & Susquehanna *Railroad*	253	140,675	10,158	154,672	28,099	24,209	1,100	51,350	5,885	110,643	44,029	.....	2,200	41,829	—13
Buffalo & Susquehanna *Railway*	91	38,494	15,692	57,070	11,216	26,519	473	22,076	3,223	63,507	—6,437	139	1,600	—7,898	—3,092
Buffalo, Rochester & Pittsburgh	576	897,037	147,959	1,084,384	148,700	188,816	12,602	353,673	19,027	722,818	361,566	622	18,000	344,188	17,362
Butte, Anaconda & Pacific	90	90,888	28,867	129,862	18,437	17,642	810	44,561	4,040	85,490	44,372	.....	2,250	42,122	24,544
Canadian Pacific Lines in Maine	233	42,953	24,245	76,164	31,436	13,389	6,304	35,683	4,225	91,037	—14,873	.....	11,000	—25,873	10,634
Carolina, Clinchfield & Ohio	248	222,424	24,314	252,245	18,325	28,204	6,755	43,968	8,602	105,854	146,391	.....	9,250	137,141	1,653
Carolina, Clinch. & Ohio Ry. Co. of S. C.	18	11,677	2,123	14,154	704	88	1,395	2,552	419	5,158	8,996	.....	750	8,246	1,553
Central of Georgia	1,924	573,417	356,979	1,002,793	181,316	243,360	32,062	374,194	39,769	870,701	132,092	7,516	50,370	89,238	—104,446
Central New England	270	262,186	40,120	312,940	53,192	32,745	1,038	81,602	3,980	172,557	140,383	303	10,500	130,186	—28,140
Charleston & Western Carolina	341	112,251	36,105	155,237	31,224	23,778	3,376	62,398	4,518	125,294	29,943	.....	5,000	24,943	22,284
Chesapeake & Ohio Lines	2,343	2,466,718	642,170	3,244,635	358,413	603,290	57,647	964,559	81,702	2,065,611	1,179,024	10,789	109,960	1,079,853	—73,355
Chicago & Erie	270	355,256	71,344	473,942	104,975	112,004	19,700	244,470	11,501	492,650	—18,708	—9,394	12,895	—40,997	—32,404
Chicago, Burlington & Quincy	9,129	6,021,798	2,334,514	9,059,969	1,185,855	1,422,075	162,460	2,547,307	195,064	5,512,761	3,547,208	—9,013	304,275	3,233,920	194,373
Chicago, Indiana & Southern	359	315,127	33,818	361,301	57,360	129,716	7,012	119,192	9,913	323,193	38,108	1,249	15,283	24,074	—38,712
Chicago Junction	12	.....	.....	178,836	17,010	6,260	1,454	88,250	3,525	116,499	62,337	.....	2,511	59,826	8,111
Chicago, Milwaukee & St. Paul	9,690	5,275,305	1,953,838	7,870,612	1,239,158	1,300,649	185,355	2,730,335	161,517	5,617,014	2,253,598	49,382	399,377	1,903,603	—1,045,639
Chicago, Peoria & St. Louis	255	94,971	38,995	142,228	26,216	33,950	6,617	64,585	5,056	136,424	5,804	.....	4,800	1,004	—33,774
Chicago, Rock Island & Gulf	477	168,187	62,113	248,595	27,005	35,293	10,386	94,521	7,667	174,872	73,723	—1,062	7,935	64,726	4,269
Chicago, Rock Island & Pacific	7,525	3,764,602	1,955,629	6,077,073	996,991	881,515	160,623	2,249,950	142,160	4,431,239	1,645,834	—12,023	280,481	1,353,330	—445,375
Chicago, St. Paul, Minneapolis & Omaha	1,747	887,189	521,225	1,499,676	301,988	198,591	32,676	569,758	32,201	1,135,214	364,462	4,837	74,877	294,422	—40,865
Chicago, Terre Haute & Southeastern	362	150,920	20,829	175,923	29,270	38,530	2,889	52,700	8,951	132,340	43,583	—44	11,500	32,039	3,025
Colorado Midland	338	121,810	39,959	171,210	36,924	37,262	8,882	67,549	5,554	156,171	15,039	—148	8,000	6,891	—13,668
Colorado & Southern	1,131	562,645	228,339	830,366	115,522	179,274	13,508	219,423	20,973	548,700	281,666	—809	30,675	250,182	79,179
Delaware, Lackawanna & Western	959	2,511,859	907,102	3,636,234	560,322	520,505	69,607	1,036,843	70,544	2,257,821	1,378,413	40,154	165,000	1,253,567	—41,556
Denver & Rio Grande	2,585	1,488,252	641,807	2,239,604	461,552	390,299	44,324	630,434	53,105	1,579,714	659,890	11,590	87,800	583,680	9,484
Detroit & Mackinac	411	71,045	38,421	117,268	12,077	12,361	2,340	39,223	2,530	68,531	48,737	—119	8,497	40,121	15,004
Detroit & Toledo Shore Line	79	129,117	.....	129,559	16,517	6,586	1,238	38,315	2,394	65,050	64,509	.....	5,900	58,609	15,994
Detroit, Grand Haven & Milwaukee	191	115,500	72,500	214,207	37,602	27,807	5,919	99,737	5,547	176,612	37,595	183	3,600	34,178	28,061
Detroit River Tunnel	2	.....	.....	106,274	2,693	3,011	.....	8,777	37	14,518	91,756	.....	6,000	85,756	6,162
Detroit, Toledo & Ironton	441	117,741	17,707	146,240	45,063	63,133	2,295	75,743	5,472	191,706	—45,466	.....	5,700	—51,165	—89,169
Duluth & Iron Range	272	1,178,279	26,131	1,212,160	107,145	79,651	1,148	227,946	10,743	426,663	785,527	13,401	65,307	733,621	88,068
Duluth, Missabe & Northern	356	1,267,662	38,952	1,316,136	92,082	107,651	2,937	191,060	11,311	405,041	911,095	6,719	73,551	844,263	136,935
Duluth, South Shore & Atlantic	627	202,479	128,043	354,783	82,214	37,436	8,146	112,993	16,749	257,538	97,245	3,191	18,000	82,436	9,925
Duluth, Winnipeg & Pacific	166	115,157	24,454	141,811	31,539	15,061	1,560	47,827	5,809	101,796	40,015	.....	7,091	32,924	15,278
El Paso & Southwestern Co	982	538,734	99,245	668,953	121,969	95,813	14,721	182,427	25,639	440,569	228,384	—1,381	35,000	192,003	—56,177
Elgin, Joliet & Eastern	802	1,066,714	3	1,139,245	190,536	219,799	4,933	310,722	19,203	745,193	394,052	.....	27,650	366,402	—151,529
Erie	1,988	3,406,277	1,070,762	4,830,064	702,348	811,369	103,974	1,550,552	98,075	3,266,318	1,563,746	—35,724	138,547	1,389,475	—427,704
Florence & Cripple Creek	87	89,416	43,940	135,712	18,481	8,292	2,724	30,584	4,220	64,301	71,411	.....	1,679	69,732	8,039
Florida East Coast	642	136,100	108,435	279,689	83,606	64,614	5,126	128,817	9,686	291,849	—12,160	—1,751	20,000	—33,911	—43,305
Fort Worth & Denver City	454	264,273	176,190	461,007	65,406	82,771	6,972	161,790	14,271	331,210	129,797	—426	18,200	111,171	—44,031
Grand Rapids & Indiana	578	246,378	275,368	559,471	73,643	72,909	11,728	219,727	17,384	395,391	164,080	1,111	22,921	142,270	—30,159
Grand Trunk Western	347	364,000	231,000	630,872	136,601	97,386	20,213	279,796	15,028	549,024	81,848	—511	31,500	49,837	—104,445
Great Northern	7,748	4,893,441	1,558,608	6,916,917	1,210,653	828,228	105,270	1,813,275	120,756	4,078,182	2,838,735	50,503	354,452	2,534,786	—408,517
Gulf, Colorado & Santa Fe	1,596	820,702	314,527	1,201,399	215,648	190,766	24,629	419,245	31,733	882,021	319,378	.....	55,681	263,697	—46,918
Hocking Valley	351	652,502	100,349	810,672	90,265	139,546	8,906	227,896	15,009	481,622	329,050	.....	41,000	288,050	3,644
Illinois Central	4,763	3,602,522	1,319,120	5,646,002	861,320	1,322,126	108,151	1,960,483	135,097	4,387,177	1,258,825	—3,020	264,000	991,805	67,167
Indiana Harbor Belt	105	.....	.....	278,353	39,217	35,000	2,871	120,993	7,499	205,580	72,773	2,114	5,500	69,387	—20,683
International & Great Northern	1,160	615,659	227,718	894,346	120,528	114,119	27,036	356,534	29,947	648,164	246,182	—1,420	20,000	224,762	—1,308
Kanawha & Michigan	177	270,141	35,829	312,337	44,123	61,159	2,784	86,254	6,689	201,009	111,328	—25	9,535	101,768	—28,396
Kansas City Southern	827	661,711	172,370	915,549	80,022	118,007	25,489	283,178	30,395	537,091	378,458	.....	40,013	338,445	—9,615
Lake Erie & Western	906	412,125	103,688	546,895	94,365	128,960	13,759	193,912	11,622	442,618	104,277	.....	22,138	82,139	—73,361
Lake Shore & Michigan Southern	1,872	3,164,863	1,435,872	5,134,723	757,638	1,044,405	95,468	1,585,810	90,376	3,573,697	1,561,026	17,816	150,000	1,428,842	—567,164
Lehigh Valley	1,438	2,948,734	599,914	3,672,296	423,184	605,986	88,764	1,158,995	66,686	2,343,615	1,328,681	—38,499	121,000	1,169,182	—168,330
Long Island	399	258,201	998,076	1,395,520	132,572	112,706	16,308	478,771	24,833	765,190	630,330	—8,034	63,660	558,636	—20,454
Louisiana & Arkansas	255	119,497	24,489	149,136	22,538	23,556	2,690	35,012	5,110	88,906	60,230	.....	4,166	56,064	10,828
Louisiana Ry. & Navigation	351	140,488	28,611	178,862	31,715	18,175	6,738	70,139	5,584	132,351	46,511	.....	5,500	41,011	—3,873
Louisville & Nashville	4,923	3,533,657	1,273,094	5,092,247	946,640	1,072,325	102,271	1,717,395	98,981	3,937,612	1,154,635	—937	150,608	1,003,088	—250,126
Louisville, Henderson & St. Louis	200	71,850	41,857	120,026	24,328	13,646	3,842	37,029	2,947	81,792	38,234	384	3,600	35,018	15,496

REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF AUGUST, 1913—CONTINUED.

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Net operating revenue (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance										
		Freight.	Passenger.	Total, inc. misc.	Way and structures.	Of equipment.	Traffic.	Transportation.	General.	Total.					
Maine Central	1,207	$542,758	$453,877	$1,058,080	$188,600	$139,329	$16,605	$386,523	$22,588	$753,645	$304,435	$531	$47,098	$257,868	—$67,794
Michigan Central	1,819	1,762,451	1,012,777	3,057,779	542,324	523,749	76,238	1,208,697	57,466	2,408,474	649,305	3,142	116,000	536,447	—350,320
Midland Valley	373	92,025	40,339	139,018	30,532	29,394	2,576	49,654	5,633	17,789	21,229	29	5,986	15,272	—6,886
Minneapolis & St. Louis	1,586	555,822	210,155	818,207	112,890	120,427	17,484	290,258	19,834	560,893	257,314	—38	32,753	224,523	—10,867
Missouri & North Arkansas	365	72,003	44,878	122,996	26,783	16,716	3,834	44,785	5,675	97,793	25,203	.....	5,500	19,703	19,184
Minneapolis, St. Paul & Sault Ste. Marie	3,976	1,704,970	711,467	2,560,775	370,204	415,724	61,899	782,561	51,507	1,681,895	878,880	23,369	115,878	786,371	—111,879
Missouri, Kansas & Texas System	3,817	1,815,462	935,032	2,930,169	489,697	367,567	66,494	1,037,670	91,383	2,052,811	877,358	—9,151	106,997	761,210	21,850
Missouri Pacific	3,920	1,948,185	492,458	2,637,050	426,355	496,552	65,927	991,384	70,511	2,050,729	586,321	—4,318	93,390	488,613	—93,642
Monongahela	67	132,646	2,892	137,412	18,421	7,473	419	25,723	2,154	54,190	83,222	.....	2,350	80,872	593
Monongahela Connecting	6	.....	.....	89,436	14,327	14,763	300	41,801	2,397	73,588	15,848	.....	2,680	13,168	—20,050
Nashville, Chattanooga & St. Louis	1,231	689,419	292,078	1,050,745	165,414	219,582	45,954	394,991	29,523	855,464	195,281	825	25,340	170,766	—45,361
Nevada Northern	165	135,410	14,647	153,680	16,848	18,605	365	35,606	4,439	75,863	77,817	.....	6,651	71,166	—5,658
New Orleans & North Eastern	196	266,611	60,258	350,245	38,179	59,270	9,923	129,445	11,566	248,383	101,862	—950	15,800	85,112	22,720
New Orleans Great Northern	283	106,108	37,150	155,794	23,453	10,623	3,073	47,918	6,906	91,973	63,821	—92	2,333	61,396	1,846
New Orleans, Mobile & Chicago	404	131,166	35,671	178,582	24,012	17,280	3,539	58,592	7,350	110,773	67,809	—46	7,198	60,565	—1,662
New York, Chicago & St. Louis	565	809,440	182,800	1,026,586	151,649	165,693	43,758	422,960	17,825	801,885	224,701	—1,154	36,000	187,547	—76,502
New York Central & Hudson River	3,751	5,759,070	3,874,783	10,629,957	1,612,896	1,906,017	210,533	3,598,514	244,787	7,572,747	3,057,210	4,699	541,776	2,520,133	—300,568
New York, New Haven & Hartford	2,113	2,803,867	2,745,231	6,100,010	794,358	789,956	70,010	2,196,030	163,376	4,013,730	2,086,281	6,627	320,000	1,772,908	—835,794
New York, Ontario & Western	566	570,119	348,187	974,550	150,131	129,330	10,547	298,655	14,441	603,104	371,446	1,453	19,000	353,899	—73,417
New York, Philadelphia & Norfolk	112	270,817	62,575	356,723	26,863	75,367	5,446	138,236	13,830	259,742	96,981	.....	8,000	88,981	—13,542
New York, Susquehanna & Western	154	171,404	58,183	259,603	49,314	34,769	1,774	103,013	11,499	200,369	59,234	3,350	17,649	44,935	3,226
Norfolk & Western	2,035	3,298,796	497,009	3,933,478	568,123	757,135	55,165	1,195,478	69,039	2,644,940	1,288,538	—1,833	125,000	1,161,705	—217,308
Norfolk Southern	569	163,920	83,713	273,233	34,939	43,334	4,416	81,704	14,231	178,624	94,609	—20	9,210	85,379	7,079
Northern Central	472	817,511	286,437	1,171,513	171,305	246,828	17,999	532,556	26,514	995,202	176,311	1,064	41,026	136,349	—62,803
Northern Pacific	6,312	3,936,448	1,685,443	6,013,758	973,045	728,838	108,677	1,963,837	86,252	3,860,649	2,153,109	50,830	356,581	1,847,358	—250,465
Northwestern Pacific	401	157,504	238,060	418,907	48,732	37,202	4,126	120,062	12,017	222,139	196,768	.....	15,100	181,668	4,805
Oregon-Washington R. R. & Nav. Co.	1,914	993,462	504,664	1,598,947	245,571	170,499	59,816	529,488	60,998	1,066,372	532,575	1,958	112,968	421,565	—124,875
Pecos & Northern Texas	482	143,395	48,481	202,239	22,401	34,738	3,512	60,173	5,835	126,659	75,580	.....	7,821	67,759	—3,713
Pennsylvania *Co.*	1,751	4,733,155	1,038,591	6,293,524	775,556	1,088,924	101,570	2,121,646	123,172	4,210,868	2,082,656	—8,446	252,807	1,821,403	—261,376
Pennsylvania *Railroad*	4,032	11,532,958	3,972,031	16,496,371	2,037,821	3,270,604	253,021	5,707,317	367,160	11,635,923	4,860,448	—136,789	633,599	4,090,060	—267,177
Pere Marquette	2,325	852,099	490,104	1,472,869	276,849	283,103	32,571	597,218	40,332	1,230,073	242,796	—9,262	49,782	183,752	—205,519
Philadelphia & Reading	1,020	3,171,475	729,251	4,083,652	466,581	708,490	44,346	1,339,256	59,296	2,617,969	1,465,683	47,319	102,559	1,410,443	—363,798
Philadelphia, Baltimore & Washington	713	914,175	805,242	1,884,005	299,538	355,771	36,898	771,192	41,898	1,505,297	378,708	.....	53,734	324,974	—96,922
Pittsburgh & Lake Erie	222	1,508,755	194,748	1,766,008	209,867	326,095	14,803	403,464	28,469	982,698	783,310	—72	57,000	726,238	—211,086
Pittsburgh, Cincinnati, Chic. & St. Louis	1,472	2,688,113	895,089	3,989,567	579,428	772,421	82,996	1,415,593	76,459	2,926,897	1,062,670	—975	145,990	915,705	216,180
Pittsburgh, Shawmut & Northern	282	167,760	12,931	183,146	45,010	49,851	1,690	63,514	4,782	164,847	18,299	.....	2,033	16,266	—24,157
Port Reading	21	94,903	.....	95,893	17,973	2	30	30,034	79	48,118	47,775	—994	12,000	34,781	—43,628
Richmond, Fredericksburgh & Potomac	88	112,974	77,439	217,033	22,989	27,310	2,939	85,716	7,197	146,151	70,882	—441	7,909	62,532	—11,350
Rutland	468	164,121	150,113	363,452	36,074	63,756	10,573	122,986	4,850	238,239	125,213	.....	17,103	108,110	3,986
St. Joseph & Grand Island	319	88,835	35,994	136,736	28,696	18,883	4,987	54,531	6,156	113,253	23,483	13	6,244	17,252	—16,840
St. Louis & San Francisco	4,742	2,646,119	1,081,234	3,973,997	565,546	669,954	73,710	1,242,403	85,517	2,637,130	1,336,867	.....	113,594	1,223,273	127,693
St. Louis, Brownsville & Mexico	518	133,187	83,709	240,017	29,860	26,239	4,652	77,879	10,413	149,043	90,974	.....	5,500	85,474	37,136
St. Louis, Iron Mountain & Southern	3,365	2,085,704	587,973	2,850,064	409,118	519,460	55,018	851,758	67,711	1,903,065	954,999	—3,889	97,285	853,825	76,214
St. Louis Merchants' Bridge Terminal	9	.....	343	170,731	37,840	13,843	686	84,492	5,436	142,297	28,434	.....	5,600	22,834	—26,410
St. Louis, San Francisco & Texas	244	94,135	36,025	140,386	25,033	15,794	2,494	46,626	5,637	95,584	44,802	.....	1,225	43,577	13,725
St. Louis Southwestern	906	549,101	140,872	725,404	59,946	110,437	25,111	164,857	27,288	387,639	337,765	—1,421	30,232	306,112	32,883
San Antonio & Aransas Pass	724	329,258	155,541	507,791	60,685	65,807	5,846	158,122	11,128	301,588	206,203	.....	12,000	194,203	—9,949
San Pedro, Los Angeles & Salt Lake	1,133	504,639	304,964	870,817	124,073	142,371	33,006	278,390	17,731	595,571	275,246	—931	40,000	234,315	—46,858
Seaboard	3,082	1,143,608	465,664	1,787,449	220,015	249,501	65,379	699,816	54,843	1,289,554	497,895	—1,550	82,000	414,345	—3,939
Southern	7,037	3,353,169	1,922,701	5,665,399	823,431	938,010	179,825	1,963,662	157,276	4,062,204	1,603,195	3,662	209,417	1,397,440	—244,442
Southern Kansas of Texas	179	81,176	17,683	104,708	10,295	18,436	2,168	31,021	3,573	65,493	39,215	.....	4,473	34,742	—7,590
Southern Pacific Co.	6,381	4,628,619	2,920,714	8,172,097	890,266	1,212,354	157,865	2,233,545	226,718	4,720,748	3,451,349	127,235	401,285	3,177,299	—873,383
Spokane International	163	64,306	25,157	95,120	18,879	5,082	1,928	26,689	3,486	56,064	39,056	.....	3,020	36,036	—22,513
Spokane, Portland & Seattle	556	238,730	196,714	473,513	58,212	37,339	10,324	104,509	12,857	223,241	250,272	3,216	53,400	200,088	—18,381
Tennessee Central	294	95,789	44,228	147,153	30,089	13,739	5,696	48,981	7,097	105,602	41,551	.....	4,245	37,306	—8,936
Terminal R. R. Ass'n of St. Louis	34	.....	234	247,867	49,651	22,198	882	88,707	3,907	165,345	82,522	7,455	26,600	63,377	—29,362
Toledo & Ohio Central	443	470,347	71,274	575,590	102,096	108,178	8,361	215,013	9,672	443,310	132,280	—595	19,117	112,568	—22,915
Toledo, Peoria & Western	248	66,347	51,135	123,581	24,396	29,494	2,373	49,850	3,593	109,706	13,875	.....	5,000	8,875	—13,712
Toledo, St. Louis & Western	451	352,038	50,279	426,503	41,806	54,271	15,866	140,044	9,102	261,089	165,414	.....	14,700	150,714	40,835
Trinity & Brazos Valley	463	150,470	61,535	219,140	51,658	43,436	11,273	97,111	11,115	214,593	4,547	.....	4,000	547	—8,533
Union Pacific	3,611	3,155,177	1,123,978	4,697,233	521,397	577,716	106,864	1,133,094	125,559	2,464,630	2,232,603	863	168,087	2,065,379	—229,196
Union R. R. of Baltimore	9	112,620	25,934	140,014	8,557	.....	1,424	5,472	2,518	17,971	122,043	.....	5,851	116,192	5,710
Vandalia	910	674,025	244,270	1,032,132	145,455	192,269	25,896	384,260	19,126	767,006	265,126	.....	30,316	234,810	—31,807
Vicksburgh, Shreveport & Pacific	171	83,142	56,205	149,824	28,815	27,342	3,077	49,577	5,144	113,955	35,869	—160	7,800	27,909	5,036
Virginian	503	489,693	42,960	547,514	67,854	95,126	5,194	119,420	8,917	296,511	251,003	8,040	21,060	237,983	36,968
Wabash	2,515	1,832,553	800,956	2,876,760	376,463	457,202	99,622	1,048,638	73,666	2,055,591	821,169	—3,249	74,447	743,473	—142,702
Washington Southern	36	34,601	38,231	97,978	13,368	14,383	1,193	41,190	2,983	73,117	24,861	—165	3,519	21,177	—11,360
West Jersey & Seashore	356	176,436	833,143	1,058,766	111,146	117,106	20,555	280,660	12,682	542,149	516,617	—1,040	27,301	488,276	4,851
Wheeling & Lake Erie	459	668,658	77,467	783,289	133,487	146,122	8,013	237,630	17,205	542,457	240,832	—141	32,444	208,247	—99,103
Yazoo & Mississippi Valley	1,372	588,067	240,342	889,793	161,796	171,404	16,253	329,582	26,069	705,104	184,689	—1,794	43,000	139,895	75,751

REVENUES AND EXPENSES OF RAILWAYS.

TWO MONTHS OF FISCAL YEAR, 1914.

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Net operating revenue (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total, inc. misc.	Maintenance: Way and structures.	Maintenance: Of equipment.	Traffic.	Transportation.	General.	Total.					
Alabama & Vicksburg	143	$181,910	$91,772	$296,860	$45,688	$68,292	$7,448	$106,789	$11,419	$239,636	$57,224	—$1,820	$14,900	$40,504	—$27,732
Arizona & New Mexico	109	139,097	17,619	163,853	29,954	16,889	1,451	30,615	5,543	84,452	79,401	.....	6,800	72,601	—33,437
Arizona Eastern	367	336,036	75,306	433,539	58,214	64,215	4,241	129,499	22,432	278,601	154,938	—35	22,793	132,110	—55,036
Atchison, Topeka & Santa Fe	8,358	10,255,286	4,425,418	15,835,523	2,528,372	2,853,202	337,484	4,360,282	361,667	10,441,007	5,394,516	.....	750,887	4,643,629	72,327
Atlanta, Birmingham & Atlantic	645	345,736	130,980	516,819	86,333	97,629	27,560	208,741	21,405	441,668	75,151	.....	28,673	46,478	14,467
Atlantic & St. Lawrence	167	153,780	70,743	243,603	53,826	36,937	7,541	113,059	6,943	218,306	25,297	.....	20,314	4,983	38,566
Atlantic City	167	145,101	638,929	814,141	48,731	24,715	10,912	312,945	5,139	402,442	411,699	—9,558	18,000	384,141	67,284
Atlantic Coast Line	4,617	3,044,021	1,380,100	4,788,868	852,133	929,838	99,772	1,943,640	186,636	4,012,019	776,849	.....	264,000	512,849	—312,212
Bangor & Aroostook	631	289,694	125,289	442,914	86,972	82,440	5,095	161,623	21,089	357,219	85,695	262	19,515	66,442	—41,468
Belt Ry. Co. of Chicago	21	.....	.....	512,563	42,044	66,641	1,087	198,476	12,601	320,849	191,714	.....	19,525	172,189	—28,250
Bessemer & Lake Erie	204	1,995,917	108,017	2,128,610	180,351	301,318	22,139	453,051	21,840	978,699	1,149,911	.....	76,000	1,073,911	—65,484
Boston & Maine	2,252	4,697,130	3,518,417	8,857,078	1,175,120	1,302,445	68,846	3,659,265	207,964	6,413,580	2,443,498	58,485	332,442	2,169,541	—316,706
Buffalo & Susquehanna *Railroad*	253	280,440	19,549	307,796	56,987	46,638	2,366	101,578	12,147	219,716	88,080	.....	4,400	83,680	13,277
Buffalo & Susquehanna *Railway*	91	79,546	28,257	113,881	21,086	53,941	928	43,380	5,720	125,055	—11,174	17	3,200	—14,357	—396
Buffalo, Rochester & Pittsburgh	576	1,803,124	271,733	2,156,769	323,247	391,749	25,024	689,231	39,972	1,469,223	687,546	613	36,000	652,159	57,592
Butte, Anaconda & Pacific	90	189,253	42,947	251,447	31,444	37,466	1,489	86,048	8,342	164,789	86,658	.....	4,500	82,158	50,932
Canadian Pacific Lines in Maine	233	82,573	50,529	149,121	77,230	28,747	13,070	69,541	9,472	198,060	—48,939	.....	22,000	—70,939	—3,107
Carolina, Clinchfield & Ohio	248	418,121	47,337	475,306	32,473	51,631	13,240	83,181	17,150	197,675	277,631	.....	18,500	259,131	25,417
Carolina, Clinch. & Ohio Ry. Co. of S. C.	18	22,244	4,016	26,824	1,219	164	2,680	4,982	739	9,784	17,040	.....	1,500	15,540	4,216
Central of Georgia	1,924	1,154,947	699,954	2,008,082	336,684	483,636	69,172	746,715	78,265	1,714,472	293,610	14,898	100,740	207,768	—228,889
Central New England	270	490,252	75,457	589,644	95,685	64,942	2,154	155,445	10,913	329,139	260,505	633	21,000	240,138	—62,641
Charleston & Western Carolina	341	220,234	68,486	301,697	60,962	51,081	6,483	119,627	8,839	246,992	54,705	.....	10,000	44,705	36,185
Chesapeake & Ohio Lines	2,343	4,641,419	1,193,167	6,106,518	734,209	1,136,083	111,102	1,909,718	151,697	4,042,809	2,063,709	1,506	219,920	1,845,295	—68,989
Chicago & Erie	270	692,199	138,282	916,883	193,833	216,673	43,603	465,396	23,879	943,384	—26,501	—9,382	25,790	—61,673	—86,523
Chicago, Burlington & Quincy	9,129	10,977,427	4,460,744	16,814,528	2,299,860	2,843,643	293,858	4,934,751	285,836	10,657,948	6,156,580	—27,215	608,550	5,520,815	476,888
Chicago, Indiana & Southern	359	596,162	64,458	682,295	106,441	221,662	13,877	233,387	20,937	596,304	85,991	2,582	30,565	58,008	—46,754
Chicago Junction	12	.....	.....	350,067	34,959	13,061	2,514	172,518	7,268	230,320	119,747	.....	5,074	114,673	2,840
Chicago, Milwaukee & St. Paul	9,690	10,502,449	3,835,209	15,611,130	2,364,441	2,432,333	346,249	5,385,658	300,224	10,828,905	4,782,225	82,532	730,840	4,133,917	—1,208,967
Chicago, Peoria & St. Louis	255	188,471	71,635	275,861	48,320	62,721	13,252	123,091	10,059	257,443	18,418	.....	9,600	8,818	—31,860
Chicago, Rock Island & Gulf	477	324,209	120,745	482,618	64,722	77,182	20,391	185,794	15,680	363,769	118,849	—2,673	15,870	100,306	—30,128
Chicago, Rock Island & Pacific	7,525	7,253,261	3,673,050	11,636,756	1,937,996	1,786,620	320,930	4,476,484	297,223	8,819,253	2,817,503	—31,599	551,235	2,234,669	—813,635
Chicago, St. Paul, Minneapolis & Omaha	1,747	1,715,973	1,002,682	2,920,784	588,374	383,233	59,884	1,089,494	64,662	2,185,647	735,137	7,933	146,581	596,489	—28,247
Chicago, Terre Haute & Southeastern	362	277,538	40,079	325,759	60,796	68,723	5,863	99,145	16,531	251,058	74,701	—550	23,000	51,151	14,701
Colorado Midland	338	207,176	74,051	298,727	75,207	75,358	17,644	128,779	11,306	308,234	—9,507	—622	16,000	—26,129	—20,537
Colorado & Southern	1,131	562,645	228,339	830,366	115,522	179,274	13,508	219,423	20,973	548,700	281,666	—809	30,675	250,182	79,179
Delaware, Lackawanna & Western	959	4,973,090	1,761,383	7,185,827	1,125,287	1,078,716	144,344	2,060,925	135,721	4,544,993	2,640,834	70,715	330,000	2,381,549	4,838
Denver & Rio Grande	2,585	2,887,313	1,196,150	4,284,215	960,729	786,385	88,716	1,217,061	107,188	3,160,079	1,124,136	7,823	175,600	966,359	—89,000
Detroit & Mackinac	411	139,536	74,548	228,571	25,354	27,814	5,129	79,373	5,003	142,673	85,898	1,094	16,900	70,092	18,825
Detroit & Toledo Shore Line	79	243,689	.....	244,258	29,169	13,519	2,418	70,747	5,412	121,265	122,993	.....	11,800	111,193	30,242
Detroit, Grand Haven & Milwaukee	191	228,500	138,500	421,419	45,754	58,146	11,685	205,357	10,627	331,569	89,850	327	7,200	82,977	96,423
Detroit River Tunnel	2	.....	.....	214,501	5,884	6,020	.....	17,775	75	29,754	184,747	.....	12,000	172,747	18,224
Detroit, Toledo & Ironton	441	226,267	32,613	282,193	86,205	111,366	4,879	154,452	11,169	368,071	—85,878	.....	11,400	—97,278	—153,627
Duluth & Iron Range	272	2,302,486	52,023	2,375,182	14,419	148,454	2,857	449,281	23,349	838,360	1,536,822	19,499	129,433	1,426,888	100,656
Duluth, Missabe & Northern	356	2,492,538	71,799	2,583,603	212,391	207,417	4,951	386,394	21,663	832,816	1,750,787	12,842	147,145	1,616,484	273,973
Duluth, South Shore & Atlantic	627	380,170	238,650	666,710	157,749	73,563	16,719	224,463	25,234	497,728	168,982	5,193	36,000	138,175	—1,327
Duluth, Winnipeg & Pacific	166	249,336	51,298	305,026	70,766	32,959	4,639	96,489	11,361	216,214	88,812	.....	15,263	73,549	40,089
El Paso & Southwestern Co.	982	1,109,397	202,587	1,370,924	244,042	200,483	30,491	381,527	53,089	909,632	461,292	—3,018	70,000	388,274	—134,183
Elgin, Joliet & Eastern	802	2,092,764	8	2,240,518	364,661	415,918	9,871	610,503	37,893	1,438,846	801,672	.....	55,300	746,372	—317,828
Erie	1,988	6,792,663	2,077,986	9,592,654	1,322,498	1,635,880	209,891	3,035,048	222,317	6,425,634	3,167,020	—35,333	277,093	2,854,594	—507,409
Florence & Cripple Creek	87	171,734	73,986	250,042	35,634	17,858	5,379	60,627	8,204	127,692	122,350	.....	3,612	118,738	9,165
Florida East Coast	642	277,293	215,741	566,842	165,699	128,118	10,150	261,798	20,935	586,700	—19,858	—3,158	40,000	—63,016	—57,472
Fort Worth & Denver City	454	498,839	332,293	872,749	128,004	170,708	17,896	308,818	28,760	654,186	218,563	—1,567	30,600	186,396	—85,704
Grand Rapids & Indiana	578	490,408	490,339	1,057,065	150,920	150,193	23,711	435,635	32,797	793,256	263,809	1,991	46,562	219,238	—46,162
Grand Trunk Western	347	728,000	457,500	1,263,066	199,049	212,788	40,474	546,497	29,793	1,028,601	234,465	—2,378	63,000	169,087	—76,859
Great Northern	7,748	10,356,872	3,138,662	14,432,644	2,473,577	1,599,325	223,413	3,564,007	237,197	8,097,519	6,335,125	86,999	762,697	5,659,427	337,361
Gulf, Colorado & Santa Fe	1,596	1,557,363	618,462	2,303,741	427,182	375,361	51,998	847,298	62,908	1,764,747	538,994	.....	97,744	441,250	—101,005
Hocking Valley	351	1,212,115	185,334	1,514,688	173,081	282,648	18,220	438,062	28,935	940,946	573,742	.....	82,000	491,742	—17,938
Illinois Central	4,763	7,045,571	2,510,324	10,964,444	1,730,870	2,513,181	207,164	3,946,225	271,733	8,669,173	2,295,271	—6,986	528,000	1,760,285	220,882
Indiana Harbor Belt	105	.....	.....	552,500	90,419	61,764	5,494	248,809	14,962	421,448	131,052	4,002	11,000	124,054	—44,207
International & Great Northern	1,160	1,122,150	430,800	1,656,375	235,040	236,592	54,172	697,644	63,472	1,286,920	369,455	—3,290	40,000	326,165	—15,624
Kanawha & Michigan	177	532,063	70,968	616,053	90,831	121,988	5,518	168,019	13,958	400,314	215,739	—46	19,007	196,686	—47,094
Kansas City Southern	827	1,242,185	327,021	1,729,434	151,514	233,227	52,944	564,095	65,472	1,067,252	662,182	.....	80,026	582,156	—13,007
Lake Erie & Western	906	795,118	187,141	1,042,533	189,206	231,856	25,999	387,991	24,459	859,511	183,022	.....	44,277	138,745	—89,550
Lake Shore & Michigan Southern	1,872	6,263,546	2,752,180	10,095,550	1,509,364	1,869,194	186,349	3,183,208	183,962	6,932,077	3,163,473	37,567	300,000	2,901,040	—455,100
Lehigh Valley	1,438	5,755,283	1,119,010	7,119,997	836,322	1,188,340	182,085	2,318,389	133,990	4,659,126	2,460,871	—62,083	242,000	2,156,789	—434,592
Long Island	399	520,156	2,082,072	2,902,787	290,973	228,090	49,104	963,450	50,711	1,582,328	1,320,459	—7,557	127,300	1,185,582	—44,559
Louisiana & Arkansas	255	230,497	48,582	288,937	49,098	43,969	5,083	68,926	10,202	177,278	111,659	.....	8,332	103,327	5,952
Louisiana Ry. & Navigation	351	256,386	56,051	331,358	64,536	40,862	13,242	131,957	11,225	261,822	69,536	.....	11,000	58,536	—35,425
Louisville & Nashville	4,923	6,982,121	2,463,617	10,017,441	1,814,423	2,070,605	215,997	3,398,563	200,682	7,700,270	2,317,171	—1,164	301,216	2,014,791	—188,018
Louisville, Henderson & St. Louis	200	138,318	77,934	228,746	49,144	28,729	8,439	72,120	6,165	164,597	64,149	378	7,200	57,327	42,042

Railway Officers.

Executive, Financial and Legal Officers.

J. W. Newlean, comptroller of Wells Fargo & Company, with headquarters at Chicago, has been elected vice-president and comptroller in charge of the accounting and treasury departments.

Alexander Robertson, assistant to president of the Missouri Pacific at St. Louis, Mo., has been elected president of the American Refrigerator Transit Company, succeeding B. F. Bush.

E. N. Brown will continue as president of the National Railways of Mexico. Mr. Brown's resignation was tendered several months ago, but now has been withdrawn by him upon reaching a satisfactory agreement with the government.

E. H. Ryan has been elected president of the Muscatine North & South Railway, succeeding Charles Howard, resigned. Charles N. Voss has been elected vice-president and treasurer in place of D. H. McKee, resigned. H. B. Holbert, vice-president and traffic manager, has been elected secretary also, to succeed J. A. Coe, resigned. Mr. Holbert has been appointed auditor also, to succeed A. H. Kohlhammer, resigned. Headquarters Muscatine, Iowa.

William J. Cunningham, assistant professor of transportation of Harvard University, has been appointed vice-president's assistant of the New York, New Haven & Hartford, with office at New Haven, Conn. Professor Cunningham has been granted a two years' leave of absence from Harvard, but will not sever his connection with the university, and, in the meantime, will lecture at Harvard on transportation subjects. When J. H. Hustis, vice-president, becomes president of the New York, New Haven & Hartford, after the by-laws of the company have been changed, Professor Cunningham will become president's assistant.

Operating Officers.

C. H. Fox has been appointed superintendent of the Sumpter Valley, with headquarters at Baker, Ore.

J. R. Mann has been appointed superintendent of transportation of the Detroit & Toledo Shore Line, with headquarters at Detroit, Mich.

J. A. Donahey, assistant engineer of the Akron, Canton & Youngstown, has been appointed superintendent and chief engineer, with office at Akron, Ohio, succeeding F. E. Bissell, resigned.

G. W. Briece, chief clerk in the office of superintendent of car service of the Missouri Pacific, has been appointed car accountant, with headquarters at St. Louis, Mo., in place of W. S. Crane, assigned to other duties.

F. W. Quimby, trainmaster of the Chicago, Indianapolis & Louisville at Lafayette, Ind., has been appointed train rule examiner, with headquarters at Lafayette. W. H. Fogg, chief train despatcher, succeeds Mr. Quimby as trainmaster, and Howard E. Riggs takes the place of Mr. Fogg.

C. S. Millard, superintendent of the Michigan division of the Cleveland, Cincinnati, Chicago & St. Louis, at Wabash, Ind., has been appointed acting superintendent of the Chicago division, with headquarters at Indianapolis, Ind. T. J. Hayes succeeds Mr. Millard, and Edward Zeigler takes the place of Mr. Hayes as superintendent of terminals at Cincinnati, Ohio.

M. H. Broughton, trainmaster on the west end of the Cumberland division of the Baltimore & Ohio at Keyser, W. Va., has been promoted to supervisor of transportation, succeeding S. C. Wolfersberger. W. M. Haver, assistant trainmaster at Newark, Ohio, becomes trainmaster of the Monongah division at Clarksburg, W. Va., succeeding C. W. Van Horn, promoted.

James D. Tyter, superintendent of the Fitchburg division of the Boston & Maine, at Boston, Mass., has been appointed general superintendent, with office at Boston, succeeding W. F. Ray, deceased. Frank H. Flynn, trainmaster of the Southern division at Boston, succeeds Mr. Tyter. G. H. Folger, heretofore assistant general superintendent at Boston, is now superintendent of the Terminal division, with headquarters at Boston, and his former position has been abolished.

General Manager Loree, of the Baltimore & Ohio Southwestern and Cincinnati, Hamilton & Dayton, announces that effective October 1, the jurisdiction of R. N. Begien, general superintendent of the Baltimore & Ohio Southwestern, is extended over that portion of the Cincinnati Terminal division comprising the Baltimore & Ohio Southwestern terminals, and the jurisdiction of H. B. Voorhees, general superintendent of the Cincinnati, Hamilton & Dayton, will extend over that portion of the Cincinnati Terminal division comprising the Cincinnati, Hamilton & Dayton terminals. Headquarters, Cincinnati, Ohio.

Fred. Smith Risley, whose appointment as assistant superintendent of the Mohawk division of the New York Central & Hudson River, with headquarters at Albany, N. Y., has been announced in these columns, was born on September 6, 1879, at Kingston, N. Y., and was educated in the schools of his native town. He began railway work in 1898, with the West Shore, a subsidiary of the New York Central & Hudson River, as an operator, remaining in that position until 1903, when he was appointed wire chief and later was made despatcher at Weehawken, N. J. In December, 1906, he was promoted to assistant trainmaster at Weehawken, and in September, 1908, became trainmaster on the N. Y. C. & H. R., at Richland, N. Y. He was transferred as trainmaster in January, 1910, to Albany, which position he held at the time of his recent appointment as assistant superintendent of the same road, as above noted.

David B. Fleming, whose appointment as superintendent of the Buffalo division of the New York Central & Hudson River, with headquarters at Buffalo, N. Y., has been announced in these columns, was born on February 12, 1877, at Snowshoe, Pa. He began railway work in 1893, as a telegraph operator on the Beech Creek, now a part of the New York Central & Hudson River. In 1899 he was promoted to despatcher, becoming chief despatcher in 1902. He was appointed assistant trainmaster on the Pennsylvania division of the New York Central & Hudson River in 1904, and two years later was transferred in the same capacity to the Adirondack division at Utica, N. Y. In 1909, he went to the main line Mohawk division in charge of freight, and the following year was appointed assistant superintendent of the Hudson division, with headquarters at New York. He was appointed assistant superintendent of the Mohawk division at Albany in 1911, which position he held at the time of his recent appointment as superintendent of the Buffalo division of the same road, as above noted.



D. B. Fleming.

E. J. Devans, superintendent of the Rochester and Buffalo divisions of the Buffalo, Rochester & Pittsburgh, at Rochester, N. Y., has been promoted to general superintendent in charge of transportation operations, with headquarters at Rochester. M. G. McInerney, assistant superintendent at Rochester, has been promoted to superintendent, Buffalo and Rochester divisions, with headquarters at Rochester. H. E. Patterson, trainmaster at East Salamanca, has been promoted to assistant superintendent, Buffalo and Rochester divisions, with headquarters at East Salamanca. T. C. McCarthy has been promoted to trainmaster, Buffalo and Rochester divisions, with headquarters at East Salamanca. G. W. Bennett, trainmaster at DuBois, Pa., has been promoted to assistant superintendent, Middle and Pittsburgh divisions, with headquarters at Indiana. R. F. Dawson has been promoted to assistant superintendent, Middle and Pitts-

burgh divisions, with headquarters at DuBois, and Jas. Spellen has been promoted to assistant superintendent, Middle and Pittsburgh divisions, with headquarters at Butler.

Traffic Officers.

E. W. Trott has been appointed traveling freight agent of the Missouri & North Arkansas, with headquarters at Joplin, Mo.

The headquarters of J. R. Veitch, assistant to the traffic manager of the Chicago, Milwaukee & St. Paul, have been moved from Chicago to Seattle, Wash.

R. F. Schneider, soliciting freight agent of the Missouri & North Arkansas at New Orleans, La., will also represent the Toledo, St. Louis & Western in a similar capacity.

George McDougall has been appointed dairy agent of the Cleveland, Cincinnati, Chicago & St. Louis and Lake Erie & Western at Indianapolis, Ind., succeeding J. E. Pierce, resigned.

E. A. Weiberg, city passenger agent of the Chicago & Alton at Springfield, Ill., has been appointed district passenger agent, with office at Peoria, Ill. M. W. Dancey succeeds Mr. Weiberg.

George W. Metzger, passenger agent of the Pennsylvania Lines at the Union station, Chicago, has been retired under the pension rules of the company. Mr. Metzger has been in the service of the Pennsylvania for 44 years.

J. I. Hazzard, formerly general agent of the Western Maryland at Chicago, has been appointed general agent of the Blue Ridge Despatch at that place, succeeding E. B. Webb, who succeeds Mr. Hazzard as general agent of the Western Maryland.

P. A. Sullivan has been appointed traveling freight agent of the Beaumont, Sour Lake & Western, New Orleans, Texas & Mexico, St. Louis, Brownsville & Mexico, Orange & Northwestern, St. Louis, San Francisco & Texas and Chicago & Eastern Illinois, with headquarters at San Antonio, Tex. Mr. Sullivan, who heretofore was soliciting freight agent at San Antonio, is succeeded by J. B. Burns. W. H. Pennick, traveling passenger agent at San Antonio, has been transferred to Houston, Tex., in a similar capacity. Elmer Mitchell, city passenger and ticket agent of the Frisco Lines at Fort Worth, Tex., has been appointed traveling passenger agent, retaining headquarters at Fort Worth.

Engineering and Rolling Stock Officers.

H. H. Parker, roundhouse foreman at the Portsmouth, Va., shops of the Seaboard Air Line, has been appointed general foreman of those shops.

C. A. McCarthy, master mechanic of the Chicago, Rock Island & Pacific at Shawnee, Okla., has resigned to become master mechanic of the Colorado Springs & Cripple Creek District Railway, with office at Colorado Springs, Colo.

The office of assistant superintendent of motive power of the Missouri, Kansas & Texas, at Denison, Tex., heretofore held by N. L. Smithan, has been abolished, and Mr. Smithan has been transferred to the mechanical department at Waco, Tex.

F. B. Walker has been appointed assistant engineer of the Chicago, Milwaukee & St. Paul, with office at Lewiston, Mont., succeeding F. J. Herlihy, resigned to accept a position with the Cook Construction Company of Montreal, Que. Mr. Walker will have charge of the bridge work between Great Falls and Lewiston.

J. B. Roach, master mechanic of the Chicago, Burlington & Quincy at Aurora, Ill., has been transferred to Beardstown, Ill., in a similar capacity, succeeding H. G. Castron, who goes to Brookfield, Mo., as master mechanic. H. S. Mored, master mechanic at Ottumwa, Iowa, succeeds Mr. Roach, and D. R. Sweney, road foreman of engines, takes the place of Mr. Mored.

W. U. Appleton, assistant to superintendent of motive power of the Intercolonial, at Moncton, N. B., has been appointed general master mechanic of the Intercolonial and the Prince Edward Island railways, in charge of all engine houses and shops (except Moncton shops), locomotives and machinery, and Jos. Graham, erecting house foreman at Moncton, has been appointed superintendent of the locomotive shops at Moncton, succeeding H. D. McKenzie, general locomotive foreman, transferred.

W. J. Frauendiener, who recently was appointed general inspector of the locomotive department of the Cleveland, Cincinnati, Chicago & St. Louis, at Indianapolis, Ind., has been appointed master mechanic of the Eastern division, with headquarters at Bellefontaine, Ohio, in place of J. T. Luscombe, resigned. K. Tate has been appointed assistant master mechanic at Bellefontaine.

H. W. Sharpe, acting master mechanic of the Intercolonial Railway at Riviere du Loup, Que., has been appointed district master mechanic, district No. 1, of the Intercolonial and the Prince Edward Island railways, with office at Riviere du Loup. T. W. Hennesey has been appointed district master mechanic, district No. 2, with office at Campbellton, N. B. W. E. Barnes has been appointed district master mechanic, district No. 3, with office at Moncton, and H. D. McKenzie, general locomotive foreman at Moncton, has been appointed district master mechanic, district No. 4, with office at Stellarton, N. S.

Purchasing Officers.

N. A. Waldron, formerly storekeeper of the St. Louis Southwestern, has been appointed general storekeeper of the Missouri, Kansas & Texas, with headquarters at Parsons, Kan., succeeding J. M. Gibbons, resigned.

OBITUARY.

H. W. Hartman, president of the Denver & South Platte, died at Denver, Colo., on September 29, aged 63 years.

George Andrews, general agent of the passenger department of the Pacific Coast Steamship Company at Seattle, Wash., died on September 25 at the age of 59 years.

S. M. Hudson, auditor of the Fort Worth & Denver City, with headquarters at Fort Worth, Tex., died September 30, at the Mayo sanitarium at Rochester, Minn., aged 64 years. Mr. Hudson began railway work in May, 1892. He was made auditor of the Fort Worth & Denver City in March, 1899, and had been consulting auditor also of the Wichita Valley since May, 1907.

E. T. White, district superintendent of motive power of the Baltimore & Ohio, at Baltimore, Md., died at his home in that city on September 26. He was born on October 16, 1858, at Fellowsville, Va., and began railway work in 1874, as a machinist apprentice on the Baltimore & Ohio, remaining in that position for four years. He was then, consecutively, gang foreman, roundhouse foreman, and general foreman of locomotive repairs on the same road, and from June, 1889, to February, 1895, was master mechanic on the Baltimore division. He was then transferred as master mechanic to the Philadelphia division, and from March, 1899, to May, 1905, was superintendent of motive power for the lines east of the Ohio river, and since that time has been successively superintendent of motive power on lines east of the Ohio river and lines in Pittsburgh territory, and superintendent of motive power of the main line. His entire service has been with the Baltimore & Ohio.

Maxwell Evarts, general counsel of the Southern Pacific with headquarters at New York, died on October 7, at his summer home at Windsor, Vt. He was born on November 15, 1862, in New York City, and graduated from Yale University in 1884 and went to the Harvard Law School. For a time he was engaged in law work in the office of W. D. Guthrie and was for a time assistant United States district attorney. He spent some time in the West on a ranch, and his first railway work was as an attorney for the Southern Pacific in 1893. Shortly after this he gave up private practice almost entirely and had been engaged in law work for the Southern Pacific ever since. His most important work for the Southern Pacific had been in connection with appeals to the United States Supreme Court. He argued nearly all of the cases that were carried to the Supreme Court, either jointly with the counsel that tried the cases in the lower courts or alone. He took Judge Lovett's place as general counsel of the Harriman Lines in October, 1910, and early in 1913, when the Southern Pacific was separated from the Union Pacific he resigned as general counsel of the Union Pacific, remaining with the Southern Pacific as general counsel. He was also a director of the Southern Pacific. Mr. Evarts was a man who took life smilingly and who took a keen interest in his country place in Vermont. A few years ago he served two terms in the Vermont legislature. Mr. Evarts was the son of the late Secretary of State William Maxwell Evarts.

Equipment and Supplies.

LOCOMOTIVE BUILDING.

The Delaware & Hudson is considering the purchase of 10 locomotives.

The Cambria & Indiana has ordered 1 mikado locomotive from the Baldwin Locomotive Works.

The Atlantic Northern & Southern has ordered 1 mogul locomotive from the Baldiwn Locomotive Works.

The San Pedro, Los Angeles & Salt Lake has ordered 3 six-wheel switching locomotives from the Baldwin Locomotive Works.

The Dominion Coal Company, Ltd., has ordered 1 consolidation locomotive from the Montreal Locomotive Works. The dimensions of the cylinders will be 21 x 26 in.; the diameter of the driving wheels will be 50 in., the total weight in working order will be 179,000 lbs., and the steam pressure will be 200 lbs.

The Peking-Kalgan Railway, China, has ordered 5 Pacific type locomotives and 4 mikado locomotives from the American Locomotive Company. The Pacific type locomotives will have superheaters, 20 in. x 26 in. cylinders, 62 in driving wheels, a steam pressure of 180 lbs., and in working order will weigh 180,000 lbs. The mikado locomotives will be equipped with superheaters, will have 20 in. x 28 in. cylinders, 50 in. driving wheels, a steam pressure of 180 lbs., and in working order will weigh 185,000 lbs.

CAR BUILDING.

The New York Central Lines announce that they have not ordered 2,000 refrigerator cars from the Merchants Despatch Transportation Company, as has been rumored.

The Great Northern, mentioned in last week's issue as being in the market for passenger cars, has ordered ten 60-ft. steel mail cars from the Barney & Smith Car Company, and contemplates purchasing 50 first class coaches, 20 baggage cars, 25 sleeping cars and 10 cafe-parlor cars. All of these cars will have steel underframes.

IRON AND STEEL.

The Chicago & Alton has ordered 5,000 tons of Titanium open hearth rails.

The Missouri Pacific has ordered 10,000 tons of rails from the Pennsylvania Steel Company.

General Conditions in Steel.—The principal interest in the steel industry is now centered in the probable effect of the new tariff schedule. The full effect of this schedule cannot be expected inside of three months. Thus far no important importations have occurred. It is believed that the effect will be felt on the Pacific coast at an earlier date than in the interior or on the Atlantic coast. This is due largely to the fact that the freight rate from Antwerp to San Francisco is only $6 per ton, while from domestic mills to the Pacific coast the rate is $15 to $16 per ton.

SIGNALING.

The Southern Railway is installing automatic block signals on its line from Seminary, Va., to Orange, Va., 80 miles, double track. When this installation is finished trains will be run under automatic signals from Washington to Orange, 86 miles.

Fourteen Passengers Killed in Russia.—A press despatch from Dvinsk, Russia, October 6, says that in a collision at the station in that city, 14 passengers were killed and 28 injured. An express train bound from Kieff to St. Petersburg ran into an engine standing on the main track near the station.

Supply Trade News.

The American Steel Foundries, Chicago, has moved its general offices from the National Bank building to the eleventh and twelfth floors of the McCormick building, Chicago.

George Horton, of the Chicago Bridge & Iron Works, has been made a vice-president of the T. W. Snow Construction Company, Chicago, succeeding R. E. Gurley, resigned to become a director.

J. B. Kilpatrick, formerly mechanical superintendent for the First district of the Rock Island Lines, with office at Des Moines, Iowa, has been made a vice-president of the Chicago Air Brake Company, with office in Chicago.

The Roberts & Schaefer Company, Chicago, has received a contract from the Illinois Central for the construction of a 500-ton, counterbalanced bucket type, Holmen, locomotive coaling station at the new terminal which the company is building at the Nonconnah yards, Memphis, Tenn. The contract price will be approximately $14,000.

The Watson-Stillman Company, New York, has received orders for the dome connection style Chambers throttle valve for the following locomotives: 110 mikado locomotives ordered from the Baldwin Locomotive Works by the Baltimore & Ohio, 34 locomotives ordered by the Southern Railway from the Baldwin Locomotive Works, 12 locomotives ordered by the Bessemer & Lake Erie from the American Locomotive Company, and 57 locomotives ordered by the Chicago, Rock Island & Pacific from the American Locomotive Company.

Alexander Koch, president of Alexander Koch, Ltd., of Vienna, Austria (Nibelungengasse, 1 u. 3), contractor in Vienna for J. & P. Hill, Ltd., and foreign agent for various American companies, including the Locomotive Superheater Company, New York, who represented the Austrian government at the International Congress of Refrigeration in Chicago, is desirous of meeting American manufacturers of railway supplies and equipment who have representatives in Europe or England, or who are considering establishing European or English agencies. Mr. Koch is stopping at the Hotel Vanderbilt, New York.

TRADE PUBLICATIONS.

Sand Blasts.—J. M. Betton, 26 Park place, New York, has published a pamphlet in Spanish, describing the Drucklieb sand blast and furnishing information on the use and care of these devices.

Steel Sash.—The Trussed Concrete Steel Company, of Detroit, Mich., has issued an illustrated booklet of 112 pages, devoted to united steel sash, including side wall sash with pivoted or sliding ventilators, continuous sash center pivoted or top hung for monitor and sawtooth roof construction, hinged and sliding doors, metal and glass partitions, casement sash and special sash for various requirements. Complete details and specifications are given for the various types, together with a large amount of interesting information in connection with roof and window construction, and illustrations of a large number of buildings in which this company's sash has been installed.

Titanium Alloy in Open Hearth Rails.—The Titanium Manufacturing Company, Niagara Falls, N. Y., has issued bulletin No. 2 of its series of rail reports which were reviewed in the *Railway Age Gazette* of August 1, page 210. The second bulletin confirms the opinion expressed in the former review, that the method of presenting the data is excellent. The preface to the present bulletin states that the principal objection expressed to the data printed in bulletin No. 1 has reference to the accuracy of sulphur prints which form a part of comparative data shown. To answer any question as to the accuracy of such comparisons the present bulletin includes the instructions under which such sulphur prints are made, showing a degree of care that insures fair comparisons. The second bulletin covers complete tests, chemical, physical and microscopic on three of the four sets of open hearth and Titanium treated rails of which sulphur prints were shown in bulletin No. 1. The conclusions drawn from the comparisons are essentially the same as those in the first bulletin.

Railway Construction.

Chesapeake & Ohio.—The report of this company for the year ended June 30, 1913, shows that extensions of the Cabin Creek, the Coal River and the Guyandot Valley (Rum Creek branch), aggregating 18.5 miles, were completed.

Chicago & Alton.—An officer writes that the company will lay a temporary second main track between Atlanta, Ill., and Lawndale. This track will be used until the company is able to complete the grade revision work which it contemplates carrying out between those two places.

Chicago, Milwaukee & St. Paul.—According to press reports bids were recently asked for building a 41-mile section of the Puget Sound & Willapa Harbor from Maytown, Wash., through Centralia to Chehalis, thence along the Chehalis river to Doty. This company was organized to build from Raymond, Wash., on Willapa harbor, east to Chehalis, thence north via Centralia to Maytown, 65 miles. A contract was recently let to the Keasel Construction Company, Tacoma, Wash., to build the first section and this work is now under way. (September 5, p. 436.)

The Chicago, Milwaukee & St. Paul, it is said, recently opened for operation the line between Plummer, Idaho, and Spokane, Wash. (April 18, p. 925.)

Cumberland Valley Electric.—Surveys are being made it is said, from Nashville, Tenn., southeast, via Donelson, Gladeville, Henderson's Cross Roads and Statesville. The line is projected southeast, via DeKalb county to Sparta, about 80 miles from Nashville. See Cumberland Valley Interurban. (July 25, p. 169.)

Gulf, Florida & Alabama.—We are told that a contract has been given to J. P. McCarthy, Gainesville, Ga., to grade 50 miles from the present northern terminus at Broughton station, Ala., to Pine Hill, where a connection is to be made with the Southern Railway. Bids were recently asked for the masonry and steel work on a steel drawbridge, about 2,000 ft. long, including approaches, to be built over the Alabama river at Yellow Bluff. (April 18, p. 925.)

New York Subways.—The New York Public Service Commission, First district, has authorized the New York Municipal Railway Corporation (Brooklyn Rapid Transit) to make a contract with George W. McNulty for the immediate reconstruction of the Sea Beach Railroad from its connection with the Fourth avenue subway, at about Sixty-fifth street, Brooklyn, to a point immediately south of Eighty-sixth street, near Coney Island. This line will be one of the Coney Island connections with the new Fourth avenue subway, and it will be a four track line, built in a cut for the greater part of the distance. The reconstruction work is to cost about $1,877,525.

Bids for the construction of a section of the proposed Seventh avenue subway in the borough of Manhattan were opened by the New York Public Service Commission, First district, on October 1. The section is known as section No. 2, of routes Nos. 4 and 38, a part of the new system which will be operated by the Interborough Rapid Transit Company in connection with the existing subway. It will be a four track underground railroad from Times square, borough of Manhattan, to Park place, where two of the tracks will continue to the Battery and two diverge to Brooklyn. Section No. 2 covers a part of the line under Greenwich street, West Broadway and Varick street between Vesey street and Beach street. According to unofficial figures furnished by the contractors, the lowest bidder was the Thomas J. Buckley Engineering Company, New York City, at $3,036,000, and the next lowest bidder the O'Rourke Engineering Construction Company, New York City, at $3,138,000. As soon as the engineers' report is received, the commission will award the contract. (September 26, p. 586.)

Puget Sound & Willapa Harbor.—See Chicago, Milwaukee & St. Paul.

St. Louis Southwestern.—The report of this company for the year ended June 30, 1913, shows that the work of constructing second main track between certain points and extending passing tracks, which extensions will, in future, be available for use as a part of second main track, between Illmo, Mo., and Paragould, Ark., a distance of 110.4 miles, was commenced during the year. The second main track from Ancell, Mo., to Rockview, 5.33 miles, was completed and placed in service in June, 1913, and second main track from Idalia, Mo., to Dexter Junction 6.26 miles, was also completed at the close of the fiscal year, with the exception of about four miles to be ballasted. About 75 per cent. of the grading of second main track between Idalia and Avert, 6.2 miles, has been completed. Also some grading at various points between Avert and Randles, 17.1 miles. The passing tracks at Ardeola, Dexter Junction and Malden, Mo., were extended to a total of 7,000 ft., and placed in service. Similar extensions are in progress at Randles, at Paradise, at Idalia, Mo., at Greenway, at Rector, at Marmaduke and at Paragould, Ark. The extensive terminal yard at Main and Florida streets, St. Louis, Mo., was completed and placed in operation January 1, 1913, and work was commenced during the year on the new freight terminals at Fort Worth, Tex. Additional ground has been bought and right of way secured for a line to extend from the existing line at North Fort Worth to the new terminal.

Seaboard Air Line.—An officer writes that a contract has been given to E. Chapman, Plant City, Fla., to build about 4.9 miles, from Morriston, Fla., to the Acme Phosphate Company's plant.

RAILWAY STRUCTURES.

Baltimore, Md.—The Baltimore & Ohio has given a contract for paving, concreting and waterproofing the Lee street bridge, in South Baltimore, this being part of the program of grade crossing elimination which the company has under way there. The railroad has entered into an arrangement with the city which involves the carrying of four streets over the railroad tracks and removing the thoroughfares from a busy section of the Camden terminals. A city ordinance calls for the completion of one bridge each year.

Brooklyn, N. Y.—The Long Island Railroad has been directed by the New York Public Service Commission, First district, to begin work at once on a foot passageway to be constructed underneath the tracks in Atlantic avenue at the Railroad avenue crossing.

Merritton, Ont.—A contract has been given by the Department of Railways and Canals of the Dominion of Canada, to the Hamilton Bridge Works Company, Ltd., Hamilton, Ont., for fabricating the material and the erection of a one span steel railway swing bridge, to carry two tracks over the new Welland canal at Merritton. The new structure will require 500 tons of steel and the cost of the improvement will be about $65,000.

Montreal, Que.—The Canadian Pacific has given a contract to John S. Metcalf Co., Limited, Montreal, for building an extension of the Glen arch at Westmount, Montreal. The improvement is to be made to provide a roadway for four tracks over the structure. The estimated cost of the work is $50,000.

Northport, N. Y.—Plans are being made for putting up a new passenger station on the Long Island Railroad at Northport, to cost about $20,000. The construction work will probably be carried out by the company's forces.

Texarkana, Texas.—The report of the St. Louis Southwestern for the year ended June 30, 1913, shows that the steel viaduct at Texarkana, Tex., constructed jointly by the St. Louis Southwestern, the Kansas City Southern and the Texas & Pacific, was completed and placed in operation. The work of replacing the draw span over White river at Clarendon, Ark., is nearing completion, and the work of replacing metal bridges over South Bosque river, Harris creek and first and second crossings of Leon river with heavier spans was completed. A reinforced concrete fireproof freight house at Main and Florida streets, St. Louis, 30 ft. wide x 750 ft. long and five stories high, was completed and placed in service January 1, 1913; and a brick passenger station was built at Brinkley, Ark., and is owned jointly with the Chicago, Rock Island & Pacific. A brick division office building was put up at Mt. Pleasant, Tex., and a combined brick freight and passenger station at Gatesville, were also completed during the year.

Yellow Bluff, Ala.—See Gulf, Florida & Alabama, under Railway Construction.

Railway Financial News.

Atlantic Coast Line.—The railroad commission of Florida has approved of the purchase by the Atlantic Coast Line of the property and franchises of the Sanford & Everglades. This line runs from Sanford southeast through the celery growing district of Seminole county, 9½ miles.

Baltimore & Ohio Chicago Terminal.—Negotiations are being carried on between this company and the Chicago, Terre Haute & Southeastern for the joint use of the tracks from Chicago Heights to Harvey Junction.

Denver & Salt Lake.—The agreement by which the city of Denver is to aid in building the tunnel through the continental divide, which will permit of the extension of the Denver & Salt Lake to Salt Lake City, has been signed by the members of the tunnel commission of Denver, and when signed by Newman Erb will provide for a tunnel to cost about $4,500,000, of which the city will furnish about $3,000,000. It will be necessary to hold a special election to get the approval of the city for the issue of its bonds to cover this amount of money.

Fitchburg Railroad.—Stockholders have authorized the issue of $2,100,000 bonds, of the proceeds from the sale of which $500,000 will be used for refunding a like amount of bonds due May 1, 1914.

National Railways of Mexico.—D. P. Bennett, vice-president; Henry W. Taft and Ricardo Huerta have been elected members of the New York board of directors of the National Railways of Mexico, succeeding Henry Clay Pierce, E. Martinez Sobral, former consul general of Mexico at New York, and James N. Wallace, whose resignation has previously been announced.

Guillermo Brockmann, Isaac Bustamente, Adolfo Christlieb, Eduardo Lobaton, Antonio Perez, Emilio Rabast and José Simon have been elected members of the Mexican board of directors. The directors have been authorized to arrange for the issue of additional preferred stock or general mortgage bonds in such amounts as may be necessary to cover the losses resulting from the revolution, and the Mexican government has accepted the responsibility for such losses as damage to military trains, to roads by government troops, and to lines temporarily confiscated by military authorities. The agreement which has been reached by which President Brown will remain with the company is noted in the elections and appointments column.

New York, New Haven & Hartford.—The directors in answer to the criticisms made by the Interstate Commerce Commission's report announce the appointment of the following committee, to report not later than December 1:

A committee to investigate the Connecticut trolley situation, to consist of Samuel Rea, John L. Billard, Charles F. Brooker, James S. Hemingway, William Rockefeller, A. T. Hadley and Howard Elliott. This committee is to confer with and get the views of the Public Utilities Commission of Connecticut, and with George M. Woodruff, of Connecticut, of the Committee on Trolley Affairs of the New England Railroad Conference created by the governors of the New England states.

A committee to investigate on the Rhode Island trolley situation consisting of D. Newton Barney, Robert W. Taft, Edward Milligan, Edwin Milner, T. DeWitt Cuyler, Howard Elliott and Vice-President Buckland.

A committee to investigate the steamship situation to consist of A. Heaton Robertson, Henry K. McHarg, J. T. Pratt, George F. Baker, Francis T. Maxwell, Howard Elliott and J. Howland Gardner, vice-president of the New England Steamship Company. This committee is instructed to confer with Franklin W. Cram, of Maine, on the Committee on Steamship Affairs of the New England Railroad Conference.

A committee to investigate the relations of the company with the Boston & Albany, to consist of W. Murray Crane, Theodore N. Vail, Alexander Cochrane, William Skinner, James S. Elton and J. H. Hustis. This committee is instructed to confer with the Public Service Commission of Massachusetts and with some member of the New England railroad conference to be named by that body.

A committee to investigate the Western Massachusetts trolley situation, to consist of C. F. Brooker, W. Murray Crane, Lawrence Minot, Frederick F. Brewster, J. H. Hustis. That this committee is instructed to confer with the Public Service Commission of Massachusetts and with George M. Woodruff.

A committee to investigate the relations of the New York, New Haven & Hartford and Boston & Maine roads, to consist of C. F. Brooker, William Skinner, T. N. Vail, Alexander Cochrane, Arthur T. Hadley and Howard Elliott. The directors of the Boston & Maine are asked to appoint a committee from among their number, and these two committees are to confer with one another and with F. T. Bowles, of the committee on Boston & Maine of the New England Conference.

All of these committees shall select their own chairman and are given full power to call upon officers and employees for any and all information which will be promptly furnished, and shall have power to incur reasonable expenses.

Paragould Southeastern.—See St. Louis Southwestern.

St. Louis Southwestern.—Stockholders have authorized the directors to issue $5,000,000 bonds. It is understood that not more than $500,000 of these bonds will be issued in the near future, which amount will be used to reimburse the company for additions and betterments made to the Paragould Southeastern. The stockholders also ratified the lease of the Paragould Southeastern for 30 years.

Sanford & Everglades.—See Atlantic Coast Line.

Trans-Mississippi Terminal Company.—See Texas & Pacific.

Texas & Pacific.—*The Commercial & Financial Chronicle* prints the following as authoritative:

"With respect to the report from New Orleans that the Terminal Company which was organized to construct a terminal there for the Texas & Pacific has sold $8,000,000 bonds, which have been taken by the Gould family, it was learned that the following are the facts: A mortgage for $10,000,000, covering a similar amount of bonds, has been drawn up and filed by the Terminal Company. In the near future about $4,000,000 of this issue will be put out and the proceeds, if the bonds are sold, will be turned over to the Gould estate to reimburse it for moneys advanced to the Terminal Company. If the bonds are not sold, it is understood that the estate will take them. The balance of the total authorized issue will be held in the company's treasury and will be issued from time to time to pay for further developments of the property.

"The bonds are to be guaranteed both as to principal and interest by the Texas & Pacific, which owns all the stock of the Terminal Company. The first cost of the latter property will be between $4,000,000 and $5,000,000. It is understood that in return for the money advanced by the Gould estate, it received originally only the purchase-money notes of the Terminal Company."

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24 O'Clock in Switzerland.—The numbering of the hours from 1 to 24 instead of going round the clock twice in a day is found in Italy, France, Belgium, Spain and Portugal. In Switzerland the older method still prevails, as in England, and as in Germany and Austria. Some trouble is constantly being experienced on the Simplon route in this matter, as the two ends —Italy and France—have the 24-hour timing, while Switzerland retains the 1 to 12. An agitation for a change having been aroused, the Federal Council made inquiries and found that the post and telegraph department was willing to make any change, if agreed to, and the customs had no objection. The Swiss Union of Trade and Industry took counsel of its sections and found 38 of them in favor of the reform and only seven against it. Seventeen of the leading Cantons also approved, but eight were against a change. The latter are the Cantons nearest Germany and Austria, which preferred the present reckoning so long as it was retained in Germany and Austria. The Federal Council, therefore, decided to do nothing for the present, as any change would simply be transferring to the northern and eastern frontiers the difficulties now experienced on the southern and western.

[ADVERTISEMENT.]

ANNUAL REPORTS.

THE CHESAPEAKE AND OHIO RAILWAY COMPANY—THIRTY-FIFTH ANNUAL REPORT.

RICHMOND, Va., September 17, 1913.

TO THE STOCKHOLDERS:

The Thirty-fifth Annual Report of the Board of Directors, for the fiscal year ended June 30, 1913, is herewith submitted.

The average mileage operated during the year by The Chesapeake and Ohio Lines was 2,319 miles, an increase over the previous year of 55.9 miles. The mileage at the end of the year was 2,337.7 miles, an increase of 32.2 miles over mileage on June 30, 1912. See schedule on page 12.

The operations of the Chicago Line (The Chesapeake and Ohio Railway Company of Indiana) are included in this report. Its operating revenues increased 27% over last year, and, in spite of the extraordinary expenditures made necessary by the floods of the Miami and Wabash Rivers, its expenses decreased 8%, and $118,664.27 was earned towards interest charges on its bonded debt, all of which is held by your Company.

RESULTS FOR THE YEAR.

Operating Revenues were		$35,085,278.32
(Increase $795,408.55, or 2.32%.)		
Operating Expenses were		24,451,560.31
(Increase $1,815,879.27, or 8.02%.)		
Net Operating Revenue was		$10,633,718.01
(Decrease $1,020,470.72, or 8.76%.)		
Taxes were		1,375,862.89
(Increase $361,642.95, or 35.66%.)		
Operating Income, Taxes deducted, was		$ 9,257,855.12
(Decrease $1,382,113.67, or 12.99%.)		
Miscellaneous Income was		2,225,536.80
(Increase $416,973.90, or 23.06%.)		
		$11,483,391.92
Rentals and Other Payments were		865,730.10
(Increase $33,710.93, or 4.05%.)		
Income for the year available for interest was		$10,617,661.82
(Decrease $998,850.70, or 8.60%.)		
Interest (68.93% of amount available) amounted to		7,319,158.44
(Decrease $23,148.05, or 0.32%.)		
Net Income for the year, equivalent to 5.25% on capital stock outstanding, amounted to		$ 3,298,503.38
(Decrease $975,702.65, or 22.83%.)		
Dividends paid during the year: Four dividends of 1¼% each, aggregating		3,139,080.00
Remainder		$ 159,423.38

FINANCIAL.

The changes in funded debt in the hands of the public during the year were as follows:

	Sold	Retired
4½ per cent. Secured Gold Notes	$5,500,000.00	
5 per cent. Secured Gold Notes	3,500,000.00	
4 per cent. Big Sandy Ry. First Mortgage Bonds	229,000.00	$ 55,000.00
4 per cent. Coal River Ry. First Mortgage Bonds	41,000.00	29,000.00
4 per cent. Greenbrier Ry. First Mortgage Bonds		18,000.00
4 per cent. Raleigh & Southwestern Ry. First Mortgage Bonds		8,000.00
5 per cent. General Funding and Improvement Mortgage Bonds		515,000.00
Equipment Trust Obligations		1,939,523.25
	$9,270,000.00	$2,564,523.25
Net increase	6,705,476.75	

Other changes in funded debt shown on balance sheet of June 30, 1913, were:

	Increase
5 per cent. First Lien and Improvement Mortgage Bonds	$10,362,000.00
4 per cent. Coal River Ry. First Mortgage Bonds	445,000.00
5 per cent. Va. Air Line Ry. First Mortgage Bonds (assumed)	900,000.00

No First Lien and Improvement Mortgage Bonds have yet been sold, $32,586,000.00 face amount being pledged as collateral for your Company's Secured Gold Notes. Those issued during the year were on account of the acquisition of certain stocks and bonds, for additions and betterments and other capital purposes. Secured Gold Notes issued during the year were sold to provide funds for new equipment, improvements and other acquisitions. Big Sandy Railway Company First Mortgage Bonds and Coal River Railway Company First Mortgage Bonds were issued during the year for capital expenditures on those branch lines. Virginia Air Line Railway Company's First Mortgage Bonds were assumed upon the acquisition by your Company during the year of that Company's property comprising 29.8 miles of line, such acquisition having been authorized by the stockholders at the annual meeting in October, 1909.

Your Company acquired during the year additional shares of stock of White Sulphur Springs, Inc., Logan and Southern Railway Company, and Silver Grove Land and Building Company; and acquired all of the capital stock of Elkhorn and Beaver Valley Railway Company and Gauley and Meadow River Railroad Company. The Chesapeake and Ohio Railway Company of Indiana acquired 2,400 shares of capital stock of The Belt Railway Company of Chicago. Further shares of stock and First Mortgage Bonds of The Chesapeake and Ohio Railway Company of Indiana were issued in respect of the cost of certain additions and betterments made to that line and were pledged under your Company's First Lien and Improvement Mortgage.

A statement of charges to property accounts will be found on page 16, showing a net addition of $3,410,102.91; that is, $3,905,679.94 was added to cost of road, which includes $2,819,962.82 for additions and betterments and $1,085,711.12 for the Virginia Air Line—heretofore operated by your Company but now merged by deed—and for certain other items, less $495,577.03 deducted from cost of equipment owing to the fact that equipment retirals for the year were in excess of the cost of equipment purchased directly by your Company, equipment under contract not having been received until after the close of the fiscal year. The Chesapeake and Ohio Equipment Corporation issued $18,500 par amount of stock and $2,122,000 face amount of notes for purchase of new equipment, all of which were acquired by your Company at a cost of $2,136,743.30. The total property investment pertaining to the fiscal year was therefore $5,546,846.21, of which $4,956,706.12 represents equipment and other additions and betterments.

A schedule of securities owned June 30, 1913, will be found on page 17.

During the past four years your Company's increase in capital liabilities in hands of the public, its principal acquisition of stocks and bonds of other companies, and its expenditures for equipment, branch line construction, second track, and other additions and betterments have been as follows:

CAPITAL OBLIGATIONS ISSUED OR ASSUMED:	PAR VALUE.	
General Mortgage 4½% Bonds	$ 3,716,000.00	
First Consolidated Mortgage 5% Bonds	2,000,000.00	
Convertible 4½% Debentures	31,390,000.00	
Three Year 4½% Collateral Trust Notes	25,000,000.00	
One Year 5% Collateral Trust Notes	3,500,000.00	
Coal River Railway Co. First Moragage 4% Bonds	2,351,000.00	
Raleigh and Southwestern Railway Co. First Mortgage 4% Bonds	350,000.00	
Big Sandy Railway Co. First Mortgage 4% Bonds	229,000.00	
Virginia Air Line Railway Co. First Mortgage 5% Bonds	900,000.00	
	$69,436,000.00	
Realizing		$65,761,475.00
Less:		
CAPITAL OBLIGATIONS PAID OR PURCHASED:		
Peninsula Division First Mortgage 6% Bonds maturing January 1, 1911	$ 2,000,000.00	
Greenbrier and New River Railroad Co. First Mortgage 5% Bonds redeemed February 1, 1911	339,000.00	
General Funding and Improvement Mortgage 5% Bonds	7,302,000.00	
Greenbrier Railway Co. First Mortgage 4% Bonds retired November 1, 1911	2,000.00	
Equipment Trust Payments	8,044,000.00	
Through Sinking Funds:		
Big Sandy Railway Co. First Mortgage 4% Bonds	212,000.00	
Coal River Railway Co. First Mortgage 4% Bonds	85,000.00	
Greenbrier Railway Co. First Mortgage 4% Bonds	78,000.00	
Raleigh and Southwestern Railway Co. First Mortgage 4% Bonds	14,000.00	
	$18,076,000.00	
Costing		18,399,696.25
		$47,361,778.75
ACQUISITIONS:		
Stocks of:		
The C. & O. Railway Co. of Indiana	$ 5,748,800.00	
Elkhorn and Beaver Valley Railway Co	308,000.00	
Gauley and Meadow River Railroad Co	106,200.00	
The Hocking Valley Railway Co	7,671,800.00	
The Kanawha and Michigan Railway Co	4,029,200.00	
Logan and Southern Railway Co	166,700.00	
Levisa River Railroad Co. (of Ky.)	50,000.00	
The Levisa River Railroad Co. (of Va.)	50,000.00	
Kanawha Bridge and Terminal Co	400,000.00	
Silver Grove Land and Building Co	200,000.00	
White Sulphur Springs, Incorporated	1,498,200.00	
First National Bank Building Corporation	180,000.00	
Miscellaneous	6,000.00	
	$20,414,900.00	
Costing		$20,645,046.39
Bonds of:		
The C. & O. Railway Co. of Indiana First Mortgage 5%	$ 6,589,000.00	
Costing		5,311,700.00
Properties of:		
Coal River Railway Co	$ 2,304,359.88	
Raleigh and Southwestern Railway Co	816,562.42	
Virginia Air Line Railway Co	1,071,947.12	
Costing		4,192,869.42
Construction of:		
Extensions of Branch Lines, costing	$ 1,537,041.56	
Second Track (173.1 miles) and Additions and Betterments, costing	12,543,010.34	
(Excluding $1,896,363.48 expended on Chicago Line to April 30, 1913, for which securities have been acquired.)		
		14,080,051.90
Equipment:		
Additional equipment acquired (less retirals)		1,637,883.36
(Excluding $57,747.76 expended on Chicago Line to April 30, 1913, for which securities have been acquired.)		
Securities of The Chesapeake and Ohio Equipment Corporation acquired:		
Stock	$1,388,500.00	
Notes	9,782,000.00	
	$11,170,500.00	
Costing		$11,166,743.30
		$57,034,294.37

GENERAL REMARKS.

The equipment inventory as of June 30, 1913, was as follows:

Locomotives owned	536	Dec.	2
Locomotives leased	275	Inc.	20
Total	811	Inc.	18
Passenger train cars owned	348	Inc.	4
Passenger train cars leased	29	....	...
Total	377	Inc.	4
Freight train and miscellaneous cars owned	21,656	Inc.	2,116
Freight train cars leased	22,055	Dec.	3,210
Total	43,711	Dec.	1,094

The decrease in equipment is due principally to the retiral of light

capacity wooden equipment in place of which your Company has contracted for seventy ton steel cars.

The changes during the year in the reserve for accrued depreciation of equipment are as follows:

Balance to credit of account June 30, 1912			$2,790,280.31
Amount credited during year ended June 30, 1913, by charges to:			
Operating expenses	$773,327.05		
Outside operations expenses	17,669.28		
		$790,996.33	
Charges to account for:			
Accrued depreciation on equipment retired during year—			
36 locomotives, 1 passenger and 1,113 freight and work cars	$ 76,561.87		
Accrued depreciation on cars changed in class during year	1,365.87		
		77,927.74	
			713,068.59
Balance to credit of account June 30, 1913			$3,503,348.90

Increased wages affecting all branches of the service were effective during the entire fiscal year, with the exception of conductors and trainmen who were advanced September 1, 1912, and the clerical forces who were advanced February 1, 1913. The cost of all such increases for the period was approximately $825,000.

The taxes imposed, particularly in Kentucky, upon the lines of your Company have been very considerably increased, necessitating an accrual of $361,642.95 more than in the previous fiscal year.

Unprecedented floods in the James River and Ohio valleys during the last week in March seriously affected the gross and net earnings, and while your lines were open for full operation within ten days your principal connections were unable to interchange traffic in any considerable volume during the entire month of April and are still restricted in their operations.

The amounts charged to operating expenses on account of flood damages aggregate, to June 30th, $325,273.20.

There were severe and prolonged strikes by the coal miners in certain sections of West Virginia adjoining the lines of your Company, materially reducing the output of the mines affected.

GENERAL BALANCE SHEET, JUNE 30, 1913.

ASSETS.

(Excluding Stocks and Bonds owned of The C. & O. Ry. Co. of Indiana.)

TABLE 3.

Property Investment.			
Cost of Road	$169,052,783.98		
Cost of Equipment	32,709,193.03		
		$201,761,977.01	
Reserved for Accrued Depreciation of Equipment—Cr.		3,503,348.90	
			$198,258,628.11
Securities of Proprietary, Affiliated and Controlled Companies—Pledged.			
Stocks—See Schedule, page 18	$15,129,738.62		
Bonds—See Schedule, page 18	12,857,651.31		
	$27,987,389.93		
Securities—Issued or Assumed —Pledged.			
Bonds—See Schedule, page 18 (Includes First Lien and Improvement Mortgage 5% Bonds $32,586,000.00. See Contra.)	33,745,001.00	$61,732,390.93	
Miscellaneous Investments.			
Physical Property		197,203.05	
Special Funds, and Funded Debt Issued and Reserved.			
Potts Creek Branch—Cash	$41,092.09		
Raleigh and Southwestern Railway Bonds authenticated in advance of construction	40,000.00		
Special Deposits account of Construction	319,822.79		
		400,914.88	
			62,330,508.86
			$260,589,136.97
Working Assets.			
Cash in Treasury $2,102,339.11			
Cash in Transit. 825,756.52	$2,928,095.63		
Cash deposits to pay Interest and Dividends	642,086.72		
Cash deposits to pay Equipment Trust Principal	112,000.00		
Cash deposits to pay Matured Bonds and Scrip	7,174.17		
Loans and Bills Receivable	208,066.00		
Traffic Balances	866,204.85		
Agents and Conductors	794,277.06		
Miscellaneous Accounts Receivable	871,064.86		
Other Working Assets	38,841.87		
		$6,467,811.16	
Materials and Supplies		3,090,378.01	
Securities in Treasury—Unpledged.			
Stocks—See Schedule, page 17	$4,093,346.92		
Bonds—See Schedule, page 17	761,902.00		
		4,855,248.92	
Deferred Assets.			
Unmatured Interest and Dividends	$30,478.83		
Advances to Proprietary, Affiliated and Controlled Companies	90,851.38		
Advances, Working Funds (Fast Freight Lines, etc.)	37,602.62		
Special Deposits with Trustees, Various Mortgage Funds	46,295.03		
Cash and Securities in Sinking and Redemption Funds	38,399.17		
Cash and Securities in Insurance Reserve Fund	9,888.30		
Sundry Accounts	1,180,092.97		
		1,433,608.30	
			15,847,046.39
Total			$276,436,183.36

LIABILITIES.

(Excluding Stocks and Bonds owned of The C. & O. Ry. Co. of Indiana.)

Capital Stock.			
Common	$62,792,600.00		
First Preferred	3,000.00		
Second Preferred	200.00		
		$62,795,800.00	
Common—The Chesapeake and Ohio Railway Co. of Indiana		1,200.00	
			$62,797,000.00
Funded Debt.			
Secured Gold Notes, 5%, 1914	$3,500,000.00		
Secured Gold Notes, 4½%, 1914	25,000,000.00		
First Mortgage, Kineon Coal Co., 5% Bonds....1915	200,000.00		
First Mortgage Terminal, etc., 6% Bonds....1922	142,000.00		
General Funding and Improvement, 5% Bonds....1929	3,698,000.00		
Convertible 4½% Bonds. 1930	31,390,000.00		
First Mortgage, R. & S. W. Railway, 4% Bonds...1936	886,000.00		
First Consolidated Mortgage, 5% Bonds....1939	29,858,000.00		
First Mortgage, Craig Valley Branch, 5% Bonds....1940	650,000.00		
First Mortgage, Greenbrier Railway, 4% Bonds...1940	1,841,000.00		
First Mortgage, Warm Springs Branch, 5% Bonds....1941	400,000.00		
First Mortgage, Big Sandy Railway, 4% Bonds...1944	4,788,000.00		
First Mortgage, Paint Creek Branch, 4% Bonds....1945	539,000.00		
First Mortgage, Coal River Railway, 4% Bonds...1945	2,915,000.00		
First Mortgage, Potts Creek Branch, 4% Bonds....1946	600,000.00		
First Mortgage, Va. Air Line, 5% Bonds....1952	900,000.00		
First Mortgage, R. & A. Division, 4% Bonds....1989	6,000,000.00		
Second Mortgage, R. & A. Division, 4% Bonds....1989	1,000,000.00		
General Mortgage, 4½% Bonds....1992	48,129,000.00		
		$162,436,000.00	
Equipment Trust Obligations.		4,684,176.00	
			167,120,176.00
First Lien and Improvement Mortgage, 5% Bonds (see Contra)....1930			32,830,000.00
			$262,747,176.00
Working Liabilities.			
Loans and Bills Payable	$ 95,000.00		
Traffic Balances	365,286.24		
Audited Vouchers and Pay Rolls	3,762,268.94		
Unpaid Wages	61,114.06		
Miscellaneous Accounts Payable	168,372.36		
Interest and Dividends Unpaid	650,208.65		
Matured Mortgage and Secured Debt Unpaid	7,174.17		
Other Working Liabilities	118,734.69		
		$5,228,159.11	
Deferred Liabilities.			
Unmatured Interest and Rents	$1,904,693.08		
Taxes Accrued	928,383.42		
Sundry Accounts	115,225.63		
		2,948,302.13	
			8,176,461.24
Appropriated Surplus.			
Additions to Property through Income since June 30, 1907	$2,984,365.23		
Reserve Invested in Sinking Fund	1,403.85		
Reserve Invested in Other Reserve Funds	12,096.26		
		$2,997,865.34	
Profit and Loss Balance		2,514,680.78	
			5,512,546.12
Total			$276,436,183.36

This Company is also liable as a guarantor of the following securities in hands of the public—

The Chesapeake and Ohio Grain Elevator Co., First Mortgage 4% Bonds due 1938	$820,000.00
Norfolk Terminal and Transportation Co., First Mortgage 5% Bonds due 1948	500,000.00
Western Pocahontas Corporation, First Mortgage 4½% Bonds due 1945	750,000.00
Western Pocahontas Corporation, Extension Mortgage No. 1, 4½% Bonds due 1945	83,000.00
Western Pocahontas Corporation, Extension Mortgage No. 2, 4½% Bonds due 1946	51,000.00
Louisville and Jeffersonville Bridge Co. Mortgage (C. & O. Prop'n, ¼) 4½% Bonds due 1943	4,500,000.00
Richmond-Washington Co. Collateral Trust Mortgage (C. & O. Prop'n, 1/6) 4% Bonds due 1943	10,000,000.00

For the reasons cited the revenues and expenses and operating conditions experienced adverse results, as reflected in the following table:

	1913	1912	Increase or Decrease
Operating revenues	$35,085,278.32	$34,289,869.77	$795,408.55
Net operating revenue	$10,633,718.01	$11,654,188.73	—$1,020,470.72
Operating ratio	69.7%	66.0%	3.7%
Tons of revenue freight carried one mile	6,694,879,287	6,692,114,437	2,764,850
Revenue train load, tons	843	756	87
Revenue tons per loaded car	29.8	30.3	—.5

As a result of the recent decision of the Supreme Court of the United States in the case involving the validity of the two cent passenger rate law passed by the Legislature of West Virginia in February, 1907, it will be necessary for your Company to pay the coupons issued during the period of the litigation, and under the direction of the West Virginia courts a commission has been appointed to receive and verify such coupons as presented. The two cent rate is now in force in West Virginia in pursuance of this decision.

In order to aid in preserving your Company's record for safety and to reduce the chance for casualties, safety committees have been organized among the employes and the operating staff.

Extensions of the Cabin Creek, Coal River and Guyandot Valley (Rum Creek) branches aggregating 18.5 miles have been completed. The Piney River & Paint Creek R. R., 6.6 miles, and the Price Hill Division of the White Oak Ry., 2.3 miles, have been leased jointly by this Company and the Virginian Ry. and are operated by your Company. The Wolf Creek branch of the White Oak Ry. and the "Bishop Connection" between the White Oak Ry. and the Virginian Ry., 8 miles, have also been leased jointly by your Company and the Virginian Ry. and are operated by the Virginian Ry. Trackage rights were secured by your Company over 10.1 miles of the Virginian Ry. and similar rights granted the Virginian Ry. over 11.5 miles of line on Raleigh & Southwestern and Piney Creek branches.

The coal and coke tonnage was 16,363,178, a decrease of 9.5 per cent.; other freight tonnage was 8,811,063, an increase of 9.2 per cent. Total tonnage was 25,174,241 tons, a decrease of 3.7 per cent. Freight revenue was $27,549,696.17, an increase of 1.1 per cent. Freight train mileage was 7,937,054 miles, a decrease of 10.3 per cent. Revenue ton miles were 6,694,879,287, an increase of less than 0.1 per cent. Ton mile revenue was 4.12 mills, an increase of 1.2 per cent. Revenue per freight train mile was $3.47, an increase of 12.6 per cent. Revenue tonnage per train mile was 843 tons, an increase of 11.5 per cent.; including Company's freight, the tonnage per train mile was 901 tons, an increase of 14.3 per cent. Tonnage per locomotive, including Company's freight, was 790 tons, an increase of 15.5 per cent. Revenue tonnage per loaded car was 29.8 tons, a decrease of 1.7 per cent. Tons of revenue freight carried one mile per mile of road were 2,886,968, a decrease of 2.4 per cent.

There were 5,859,447 passengers carried, an increase of 6.7 per cent. The number carried one mile was 267,044,325, an increase of 5.8 per cent. Passenger revenue was $5,858,138.22, an increase of 6.4 per cent. Revenue per passenger per mile was 2.194 cents, an increase of 0.6 per cent. Number of passengers carried one mile per mile of road was 115,155, an increase of 3.3 per cent. Passenger train mileage was 5,221,099, an increase of 2.3 per cent. Passenger revenue per train mile was $1.12.2, an increase of 4.0 per cent.; including mail and express, it was $1.31.1, an increase of 3.6 per cent. Passenger service train revenue per train mile was $1.34.8, an increase of 3.8 per cent.

There were 12,574 tons of new rails (5,329 tons 100 pounds and 7,335 tons 90 pounds), equal to 85.2 track miles, used in the renewal of existing main tracks.

The average amount expended for repairs per locomotive operated was $2,623.88; per passenger train car $843.75; per freight train car $70.11.

Mr. Frederick H. Rawson was elected a director at the annual meeting on October 22, 1912, in place of General Thos. H. Hubbard, resigned. April 1, 1913, Mr. Carl Remington was appointed Secretary of the Company in place of Mr. Jas. Steuart MacKie resigned, Mr. MacKie continuing as Treasurer of the Company under previous appointment.

The Board takes this occasion to make due and fitting acknowledgment to officers and employees for faithful and efficient services performed during the year.

By order of the Board of Directors.

FRANK TRUMBULL, *Chairman.*
GEO. W. STEVENS, *President.*

GENERAL INCOME ACCOUNT.

For Year ended June 30, 1913, and Comparison with Year ended June 30, 1912.

TABLE 2.

	1913.	1912.	Increase or Decrease.
OPERATING REVENUES.			
From Freight Traffic	$27,549,696.17	$27,261,474.53	$ 288,221.64
" Passenger Traffic	5,858,138.22	5,505,536.22	352,602.00
" Transportation of Mails	386,639.91	371,137.09	15,502.82
" Transportation of Express	599,344.74	586,021.42	13,323.32
" Other Transportation	396,978.48	323,569.13	73,409.35
" Non-Transportation	294,480.80	242,131.38	52,349.42
Total Operating Revenues	$35,085,278.32	$34,289,869.77	$ 795,408.55
OPERATING EXPENSES.			
For Maintenance of Way and Structures	$ 4,342,744.60	$ 3,981,645.67	$ 361,098.93
" Maintenance of Equipment	7,275,439.48	6,724,459.75	550,979.73
" Traffic	669,016.32	636,966.92	32,049.40
" Transportation	11,380,998.32	10,503,415.25	877,583.07
" General	783,361.59	789,193.45	—5,831.86
Total Operating Expenses	$24,451,560.31 69.7%	$22,635,681.04 66.0%	$1,815,879.27
Net Operating Revenue	$10,633,718.01	$11,654,188.73	—$1,020,470.72
INCOME FROM OTHER SOURCES:			
Hire of Equipment	$ 598,740.44	$ 411,391.54	$ 187,348.90
Interest from Investments	1,319,924.00	1,083,225.91	236,698.09
Interest, General Account	2,404.25	49,159.61	—46,755.36
Miscellaneous	304,468.11	264,785.84	39,682.27
	$ 2,225,536.80	$ 1,808,562.90	$ 416,973.90
Gross Income	$12,859,254.81	$13,462,751.63	—$ 603,496.82
DEDUCTIONS FROM INCOME:			
Interest on Funded Debt	$ 7,102,563.04	$ 7,045,261.67	$ 57,301.37
Interest on Equipment Trusts	216,595.40	297,044.82	—80,449.42
Taxes	1,375,862.89	1,014,219.94	361,642.95
Rentals, Leased Roads, Joint Tracks, &c.	883,223.55	775,364.55	107,859.00
Loss on C. & O. Grain Elevator	Cr. 17,493.45	56,654.62	—74,148.07
Total deductions	$ 9,560,751.43	$ 9,188,545.60	$ 372,205.83
NET INCOME	$ 3,298,503.38	$ 4,274,206.03	—$ 975,702.65
Amount to credit of Profit and Loss June 30, 1912			$2,760,398.49
Amount of Net Income for year ended June 30, 1913, transferred to Profit and Loss			3,298,503.38
			$6,058,901.87
Deduct:			
Dividend No. 24 of 1¼% paid September 30, 1912	$784,770.00		
Dividend No. 25 of 1¼% paid December 31, 1912	784,770.00		
Dividend No. 26 of 1¼% paid March 31, 1913	784,770.00		
Dividend No. 27 of 1¼% paid June 28, 1913	784,770.00		
			$3,139,080.00
			$2,919,821.87
Discount on Securities sold during year, and sundry adjustments			405,141.09
Balance to credit of Profit and Loss June 30, 1913			$2,514,680.78

COST OF PROPERTY JUNE 30, 1913.

TABLE 4.

The Cost of Road as of June 30, 1912, was		$166,424,404.04
ADDED FOR:		
Additions and Betterments during year ended June 30, 1913:		
Branch Lines	$175,032.77	
New Second Track	123,738.85	
Changes of Line and Track Elevation	18,010.73	
Sidings and Yards	583,841.61	
Depot and Office Building, Huntington, W. Va.	97,179.71	
Depots at various places	36,824.61	
Shop Buildings at various places	50,561.76	
New Coal Pier (No. 9), Newport News, Va	358,083.78	
Additions to Piers, Newport News, Va	37,075.98	
Water and Coaling Stations	161,010.52	
Renewing and Strengthening Bridges and Filling Trestles	453,867.96	
Electric Light and Power Plants	6,309.97	
Track Scales	12,289.94	
Telephone Lines for Dispatching Trains	19,383.13	
Interlocking, Block and Other Signals	71,407.72	
Various Other Structures	88,305.30	
Shops, Machinery and Tools	67,904.72	
General Office Furniture and Equipment, Richmond, Va.	40,229.90	
Real Estate	15,856.55	
Fencing Right of Way	7,214.65	
Improved Rail and Track Appliances	144,888.12	
Increasing width of Road-bed and Ballasting	249,622.83	
Concrete Mixer	1,321.70	
	$2,819,962.82	
Deferred payments account of acquisition of Chicago Line	13,500.00	
Virginia Air Line Railway (taken over by deed July 12, 1912)	1,071,947.12	
Purchase of Securities of Subsidiary Companies	270.00	3,905,679.94
Cost of Road, June 30, 1913		$170,330,083.98
The Cost of Equipment as of June 30, 1912, was		$33,204,770.06
ADDED FOR:		
Equipment purchased during year ended June 30, 1913:		
1 Consolidation Locomotive	$12,191.95	
1 Switching Locomotive	6,000.00	
2 Mogul Locomotives, received from Virginia Air Line Ry.	21,000.00	
Adjustment of Cost 1 Mikado Locomotive acquired in previous year	Cr. 22.25	
3 Passenger Cars	4,721.89	
8 Gondolas	7,876.15	
3 Work Cars	1,804.14	
1 Mahoney Ditching Machine	2,900.00	
1 Business Car (No. 9)	32,569.77	
1 Electric Motor Passenger Car	12,656.42	
1 Car Float	81,810.00	
6 Freight Cars and 1 Work Car, previously written off, returned to service	3,793.79	
Improvement of Equipment	145,762.09	
	$333,063.95	
LESS:		
Value of Equipment retired	$828,640.98	
		$495,577.03
Cost of Equipment June 30, 1913		$32,709,193.03
Total Cost of Road and Equipment		$203,039,277.01
Amount deducted from Cost of Road and Equipment on account of difference between face value of securities of auxiliary companies and the prices at which they were taken over		1,277,300.00
Cost of Road and Equipment June 30, 1913, as per Balance Sheet		$201,761,977.01

THE HOCKING VALLEY RAILWAY COMPANY.—FOURTEENTH ANNUAL REPORT.

COLUMBUS, Ohio, September 24, 1913.

TO THE STOCKHOLDERS:

The Fourteenth Annual Report of the Board of Directors, for the fiscal year ended June 30, 1913, is herewith submitted.

The average mileage operated during the year was 351.5 miles, an increase over the previous year of 0.2 miles. The mileage at the end of the year was 351.5 miles. See schedule on page 8.

RESULTS FOR THE YEAR.

Operating Revenues were		$7,817,643.86
(Increase $513,964.45 or 7.04%.)		
Operating Expenses were		4,983,843.12
(Increase $404,800.96 or 8.84%.)		
Net Operating Revenue was		$2,833,800.74
(Increase $109,163.49 or 4.01%.)		
Taxes were		477,900.00
(Increase $63,711.68 or 15.38%.)		
Operating Income, Taxes deducted, was		$2,355,900.74
(Increase $45,451.81 or 1.97%.)		
Miscellaneous Income was		772,478.57
(Increase $78,322.92 or 11.28%.)		
		$3,128,379.31
Rentals and other payments were		97,805.41
(Decrease $4,649.92 or 4.54%.)		
Income for the year available for interest was		$3,030,573.90
(Increase $128,424.65 or 4.43%.)		
Interest (36.76% of amount available) amounted to		1,114,170.00
(Increase $42,857.01 or 4.00%.)		
Net Income for the year was		$1,916,403.90
(Increase $85,567.64 or 4.67%.)		
Dividends paid during the year:		
Four Dividends of 1¾% on Capital Stock	$769,965.00	
One Extra Dividend of 4½% on Capital Stock	494,977.50	
(Increase $494,942.50 or 64.28%.)		1,264,942.50
Remainder, devoted to improvement of physical and other assets		$651,461.40

FINANCIAL.

The reduction in funded debt shown by balance sheet of June 30, 1913, as compared with June 30, 1912, resulted from the annual payments of $316,000 on equipment trusts.

An analysis of the property accounts will be found on pages 12 and 13, by reference to which it will be seen that additions and betterments were made during the year to the amount of $859,531.22, of which $684,038.45 was added to cost of road, and $175,492.77 was added to equipment account.

During the past four years your Company's expenditures for equipment and other additions and betterments have been as follows:

Additional equipment acquired (less retirals)	$1,087,612.53
Additions and Betterments	2,137,254.81
	$3,224,867.34

GENERAL REMARKS.

The equipment in service June 30, 1913, consisted of:

Locomotives owned	149	Increase 3
Passenger train cars owned	88	Increase 6
Freight train and miscellaneous cars owned	9,428	Decrease 1,568
Freight train cars leased under Equipment Trusts	3,350	
Total Freight Train Cars	12,778	Decrease 1,568

The decrease in freight train cars is due to the continued retiral of light capacity equipment begun two years ago. 588 fifty-ton gondola cars were added during the year and 1,000 steel gondola cars of 115,000 pounds capacity have been contracted for early delivery.

During the latter part of March and first part of April unprecedented floods in the Scioto, Olentangy, Hocking and Ohio rivers damaged your Company's property and resulted in temporary suspension of through traffic on all lines in the territory affected. In spite of the affliction caused by the flood, the following results have been achieved:

	1913.	1912.	Increase.
Operating revenues	$7,817,643.86	$7,303,679.41	$513,964.45
Net operating revenue	2,833,800.74	2,724,637.25	109,163.49
Tons of revenue freight carried one mile	1,453,682,875	1,377,072,118	76,610,757
Revenue train load, tons	988	852	136
Revenue tons per loaded car	36.3	35.3	1.0

Fifteen receiving tracks were built and a water station and treating plant was erected at Parsons yard near Columbus. The work of separating the grades at South Columbus, required by the city authorities of Columbus, is nearly completed. Twenty-three passing tracks on the Toledo Division were extended an aggregate of 4.31 miles. Bridges at LeMoyne, Marion, Olentangy and Big Walnut were replaced with modern steel structures of heavy capacity.

The construction of a new coal dock and terminal yard on the east side of the Maumee River at Toledo, opposite the present dock of your Company, has been undertaken during the year in order to facilitate and increase the handling of coal for shipment to ports on the Great Lakes.

The coal and coke tonnage was 7,964,314 tons, an increase of 3.5%. Other freight tonnage was 3,214,322 tons, an increase of 23.7%. Total tonnage was 11,178,636 tons, an increase of 8.6%. Freight revenue was $6,365,734.99, an increase of 6.8%. Freight train mileage was 1,471,616 miles, a decrease of 9%. Revenue ton miles were 1,453,682,875, an increase of 5.6%. Ton mile revenue was 4.38 mills, an increase of 1.2%. Revenue per freight train mile was $4.32.6, an increase of 17.4%. Revenue tonnage per train mile was 988 tons, an increase of 16%; including Company's freight, the tonnage per train mile was 1,023 tons, an increase of 15.9%. Tonnage per locomotive, including Company's freight, was 862 tons, an increase of 10.8%. Revenue tonnage per loaded car was 36.3 tons, an increase of 2.8%. Tons of revenue freight carried one mile per mile of road was 4,135,655, an increase of 5.5%.

There were 2,277,140 passengers carried, an increase of 157 passengers. The number of passengers carried one mile in steam trains was 52,628,498, an increase of 1.1%. Passenger revenue was $929,990.92, an increase of 6.3%. Revenue per passenger per mile on steam trains was 1.721 cents, an increase of 5.7%. The number of passengers carried on steam trains one mile per mile of road was 149,725, an increase of 1.0%. Passenger train mileage of steam trains was 815,611, a decrease of 2.3%. Passenger revenue per train mile of steam trains was $1.11.1, an increase of 9.5%; including mail and express it was $1.27.7, an increase of 7.9%. Passenger service train revenue per train mile was $1.32.7, an increase of 7.5%.

There were 3,793 tons of new 90-lb. rails, equal to 26.8 track miles, used in the renewal of existing main tracks.

The average amount expended for repairs per locomotive was $2,254.19; per passenger train car $535.85; per freight train car $55.36.

On November 21, 1912, Gen. Thomas H. Hubbard resigned as a member of the Board and Mr. Henry E. Huntington was elected in his stead.

On May 15, 1913, Mr. F. J. Reynolds was elected a Director to take the place made vacant by the death of Mr. S. C. Reynolds.

Effective April 1, 1913, Mr. Jas. Steuart MacKie resigned as Secretary

CONDENSED BALANCE SHEET, JUNE 30, 1913.

ASSETS.

Property Investment.			
Cost of Road	$28,463,679.51		
Cost of Equipment	11,776,759.38		
	$40,240,438.89		
Reserve for Accrued Depreciation of Equipment—Cr.	878,206.01		
		$39,362,232.88	
Securities of Proprietary, Affiliated and Controlled Companies —Pledged.			
Stocks	$308,088.66		
Bonds	300,000.00		
		608,088.66	
Other Investments.			
Miscellaneous Investments — Securities—Pledged		1,391,718.24	
			$41,362,039.78
Working Assets.			
Cash	$1,529,163.96		
Loans and Bills Receivable	102,811.78		
Traffic Balances	94,728.04		
Agents and Conductors	431,825.85		
Miscellaneous Accounts Receivable	623,375.71		
Other Working Assets	4,867.05		
		$2,786,772.39	
Materials and Supplies		664,684.75	
Securities in Treasury—Unpledged.			
Stocks	$501.00		
Bonds	2,785,000.00		
		2,785,501.00	
Deferred Assets.			
Unmatured Interest	$35,312.50		
Advances to Proprietary, Affiliated and Controlled Companies	14,055.29		
Advances, Working Funds	684.02		
Insurance, paid in advance	4,643.35		
Cash and Securities in Sinking and Redemption Funds	36,267.32		
Cash and Securities in Insurance Fund	31,626.15		
Other Deferred Debit Items	20,697.86		
		143,286.49	
			6,380,244.63
Total			$47,742,284.41

LIABILITIES.

Capital Stock			$11,000,000.00
Funded Debt.			
First Consolidated Mortgage 4½% Bonds, 1999	$16,044,000.00		
First Mortgage C. & H. V. R. R. 4% Bonds, 1948	1,401,000.00		
First Mortgage Cols. & Tol. R. R. 4% Bonds, 1955	2,441,000.00		
H. V. Ry. Co. 4½% Gold Notes, 1913	4,000,000.00		
		$23,886,000.00	
Equipment Trust Obligations		1,339,000.00	
			25,225,000.00
			$36,225,000.00
Working Liabilities.			
Traffic Balances	$507,203.89		
Audited Vouchers and Wages Unpaid	873,654.30		
Miscellaneous Accounts Payable	63,300.52		
Matured Interest, Dividends and Rents Unpaid	374,115.25		
Other Working Liabilities	28,217.95		
		$1,846,491.91	
Deferred Liabilities.			
Unmatured Interest, Dividends and Rents Payable	$103,979.99		
Taxes Accrued	307,779.89		
Operating Reserves	43,990.88		
Other Deferred Credit Items	62,780.38		
		518,531.14	
			2,365,023.05
Appropriated Surplus.			
Additions to Property through Income since June 30, 1907 (to June 30, 1909)	$181,409.11		
Reserve Invested in Sinking Fund	169,370.90		
Reserve Invested in Insurance Fund	31,626.15		
		$382,406.16	
Profit and Loss—Balance		8,769,855.20	
			9,152,261.36
Total			$47,742,284.41

This Company, jointly with the Toledo and Ohio Central Railway Company, guaranteed in 1901 5% First Mortgage Bonds of the Kanawha and Hocking Coal and Coke Company due 1951 ($2,926,000. outstanding), and in 1902 5% First Mortgage Bonds of the Continental Coal Company due 1952 ($1,762,000. outstanding). The Ohio courts, in quo warranto proceedings in which bondholders were not represented, have pronounced these guaranties *ultra vires.*

of the Company and Mr. Carl Remington was appointed Secretary in his stead.

Appreciative acknowledgment is hereby made of efficient services during the year of officers and employees.

By order of the Board of Directors:

GEO. W. STEVENS,
President.

FRANK TRUMBULL,
Chairman.

GENERAL INCOME ACCOUNT.

For Year ended June 30, 1913, and Comparison with Year ended June 30, 1912.

	1913.	1912.	Increase or Decrease.
OPERATING REVENUES.			
From Freight Traffic	$6,365,734.99	$5,958,009.31	$407,725.68
" Passenger Traffic	929,990.92	874,596.31	55,394.61
" Transportation of Mails	44,527.85	44,642.01	—114.16
" Transportation of Express	90,872.49	96,190.37	—5,317.88
" Other Transportation	184,842.46	140,158.14	44,684.32
" Non-Transportation	201,675.15	190,083.27	11,591.88
Total Operating Revenues	$7,817,643.86	$7,303,679.41	$513,964.45
OPERATING EXPENSES.			
For Maintenance of Way and Structures	$781,109.46	$853,403.37	—$72,293.91
" Maintenance of Equipment	1,595,265.80	1,192,191.16	403,074.64
For Traffic	106,383.73	99,620.82	6,762.91
" Transportation	2,332,475.08	2,245,656.93	86,818.15
" General	168,609.05	188,169.88	—19,560.83
Total Operating Expenses	$4,983,843.12	$4,579,042.16	$404,800.96
(Operating Ratio)	63.8%	62.7%	1.1%
Net Operating Revenue	$2,833,800.74	$2,724,637.25	$109,163.49
INCOME FROM OTHER SOURCES:			
Interest from Investments	$159,846.00	$158,169.73	$1,676.27
Interest, General Account	52,981.22	4,885.46	48,095.76
Hire of Equipment	549,779.84	525,255.34	24,524.50
Rentals	8,576.06	5,845.12	2,730.94
Miscellaneous Income	1,295.45	.....	1,295.45
Gross Income	$3,606,279.31	$3,418,792.90	$187,486.41
DEDUCTIONS FROM INCOME:			
Interest on Funded Debt	$1,055,660.00	$995,943.00	$59,717.00
Interest on Equipment Trusts	58,510.00	75,369.99	—16,859.99
Taxes	477,900.00	414,188.32	63,711.68
Rental Leased Lines, Joint Tracks, etc.	96,563.96	102,455.33	—5,891.37
Miscellaneous Deductions	1,241.45	.....	1,241.45
Total Deductions	$1,689,875.41	$1,587,956.64	$101,918.77
NET INCOME	1,916,403.90	1,830,836.26	85,567.64

ST. LOUIS SOUTHWESTERN RAILWAY CO.—TWENTY-SECOND ANNUAL REPORT.

OFFICE OF CHAIRMAN OF THE BOARD OF DIRECTORS.
NEW YORK, September 15, 1913.

To the Stockholders of the
St. Louis Southwestern Railway Company:

I present herewith the Twenty-second Annual Report of your Company, for the fiscal year ended June 30, 1913.

Details of revenues, expenses and other results from operation and the work of improvement, are embraced, in comprehensive form, in the accompanying report of the President and General Manager.

CAPITAL STOCK.

The par value of capital stock outstanding as of June 30, 1913, was $36,500,000 ($20,000,000 preferred, and $16,500,000 common), the same as at the close of the preceding fiscal year.

FUNDED DEBT.

The funded debt was increased during the fiscal year in the sum of $1,541,000, explained as follows:

First Terminal and Unifying Mortgage Bonds issued:		
For reimbursement of treasury on account of Expenditures and Advances made to December 31, 1912, for Additions and Betterments—Road		$679,000.00
For new equipment—		
22 Locomotives	$455,000.00	
10 Steel Baggage Cars 10 Steel Combination Baggage and Mail Cars.	201,000.00	
		656,000.00
To acquire $286,000 face amount of first Refunding and Extension Mortgage Bonds of the Gray's Point Terminal Ry. Co.		286,000.00
To retire Equipment Trust Obligations of your Company outstanding January 1, 1912, (date of First Terminal and Unifying Mortgage) viz.: Series "B" face amount $428,000 (balance outstanding)		428,000.00
Total		$2,049,000.00
Deduct:		
Equipment Trust Obligations paid off and canceled—		
Series "B"—balance outstanding	$428,000.00	
Series—with Pennsylvania Company for Insurances on Lives and Granting Annuities (matured notes)	34,000.00	
Series "A"—United States Mortgage and Trust Co. (matured notes)	46,000.00	
		508,000.00
Net increase, this year		$1,541,000.00

PROPERTY INVESTMENT.

Property Investment increased during the year $1,938,414.50, sub-divided as follows:

Road and Equipment—	
(After allowing due credit for equipment and other property retired, and depreciation accrued on existing equipment, during the year)	$1,635,966.88
Securities	302,200.00
Other Investments (physical property)	247.62
Increase, this year	$1,938,414.50

Details of the increases in the foregoing "Property Investment" accounts will be found in Exhibits "H," "I" and "J" on pages 31, 32 and 33, respectively.

STEPHENVILLE NORTH & SOUTH TEXAS RAILWAY COMPANY —LEASE.

Effective July 1, 1913, the railroad and property of the Stephenville North & South Texas Railway Company, a line extending from Gatesville, Texas, to Stephenville, Texas, with a branch line from Hamilton, Texas, to Comanche, Texas, having a total main track mileage of 105.76 miles, was leased by the St. Louis Southwestern Railway Company of Texas and on and after that date was merged with, and will be operated as a part of, this system. Under the terms of the lease, authorized by an Act of the Texas legislature passed in March, 1913, that line was acquired for a period of ten years, with the option of extending the lease for an additional forty years, or the right to purchase the railroad and property of the Stephenville North & South Texas Railway Company at any time.

APPROPRIATIONS OF SURPLUS FOR ADDITIONS AND BETTERMENTS.

By reference to the "Profit and Loss" statement for the current fiscal year (see page 21), it will be noted that there was appropriated from the surplus income of the Company, the sum of $163,110.61 on account of expenditures heretofore made for additions and betterments. This amount covered expenditures made from June 1st to December 31, 1911, from current funds, and no bonds have been, or will be, issued therefor.

DIVIDENDS ON PREFERRED STOCK.

Four quarterly dividends, of 1¼% each (aggregating 5%) were declared by the Board during the fiscal year; payable October 15, 1912, January 15, April 15, and July 15, 1913.

The thanks of your company are due, and are with pleasure hereby extended, to its officers and employees for their loyalty and hearty co-operation during the past fiscal year.

For the Directors,

EDWIN GOULD,
Chairman.

"COTTON BELT ROUTE"

ST. LOUIS SOUTHWESTERN RAILWAY CO.

OFFICE OF THE PRESIDENT AND GENERAL MANAGER.
ST. LOUIS, Mo., September 2, 1913.

MR. EDWIN GOULD,
Chairman of the Board of Directors:

DEAR SIR—

Herewith is submitted the Annual Report of the company for the fiscal year ended June 30, 1913.

During the year the average main track mileage operated was 1,609.3 miles, an increase of 61.1 miles over the preceding year. The main track mileage operated at the close of the fiscal year, June 30, 1913, was 1,608.5 miles, a decrease of .7 miles over the main track mileage as of June 30, 1912, which is due to corrections in mileage figures heretofore used.

A detailed exhibit of the mileage operated on June 30, 1913, showing main line and branches separately, as well as mileage in each of the states through which the company operates, will be found in table No. 1 of the appendix to this report.

In the condensed comparative statement, immediately following, will be found the financial results from operation for the year ended June 30, 1913.

FINANCIAL RESULTS FROM OPERATION—ENTIRE SYSTEM.

INCOME STATEMENT FOR FISCAL YEAR.

ITEM.	Year ended June 30, 1913.	Year ended June 30, 1912.	+Increase. —Decrease. This Year.
AVERAGE MILES OPERATED	1,609.3	1,548.2	+ 61.1
RAILWAY OPERATING INCOME:			
RAIL OPERATIONS:			
Revenues	$13,296,949.59	$12,042,542.71	+$1,254,406.88
Expenses	9,215,796.90	8,419,414.88	+ 796,382.02
Net Revenue	$ 4,081,152.69	$ 3,623,127.83	+$ 458,024.86
OUTSIDE OPERATIONS:			
Revenues	$ 43,971.15	$ 42,292.01	+$ 1,679.14
Expenses	56,610.21	56,836.48	— 226.27
Net Deficit	$ 12,639.06	$ 14,544.47	—$ 1,905.41
Net Railway Operating Revenue	$ 4,068,513.63	$ 3,608,583.36	+$ 459,930.27
RAILWAY TAX ACCRUALS	468,697.19	458,511.60	+ 10,185.59
Railway Operating Income	$ 3,599,816.44	$ 3,150,071.76	+$ 449,744.68
OTHER INCOME	1,044,324.53	897,843.72	+ 146,480.81
GROSS INCOME	$ 4,644,140.97	$ 4,047,915.48	+$ 596,225.49
DEDUCTIONS FROM GROSS INCOME	2,757,949.93	2,430,296.44	+ 327,653.49
INCOME BALANCE TRANSFERRED TO CREDIT OF PROFIT AND LOSS	$ 1,886,191.04	$ 1,617,619.04	+$ 268,572.00

PROFIT AND LOSS STATEMENT, JUNE 30, 1913.

ITEM.	DR.	CR.
Balance June 30, 1912		$4,402,584.80
Credit Balance Transferred from Income Account		1,886,191.04
Miscellaneous Credits		15,350.93

Dividend Appropriations of Surplus:		
On $20,000,000 Preferred Stock—		
1¼% Payable Oct. 15, 1912.		
1¼% Payable Jan. 15, 1913.		
1¼% Payable Apr. 15, 1913.	$1,000,000.00	
1¼% Payable July 15, 1913.		
Less Dividends on Stock held by Company	5,317.52	
		$ 994,682.48
Appropriations of Surplus for Additions and Betterments		163,110.61
Funded Debt Discount Extinguished through Surplus		220,110.00
Loss on Retired Road and Equipment:		
Road	$9,926.23	
Equipment	33,659.34	
		43,585.57
Miscellaneous Debits		9,099.20
Balance, Credit, June 30, 1913, Carried to General Balance Sheet		4,873,538.91
Total	$6,304,126.77	$6,304,126.77

RAIL OPERATIONS—REVENUES.

The total revenues from operation for the fiscal year amounted to $13,296,949.59, an increase over the previous year of $1,254,406.88, or 10.42 per cent. The net revenue from operations increased $458,024.86, or 12.64 per cent.

Freight revenue increased $893,375.17, or 9.96 per cent. General business conditions were very satisfactory during the year and, with exceptionally good cotton, grain and fruit crops, resulted in a very substantial increase in the tonnage movement over the line.

Passenger revenue increased $317,190.51, or 13.78 per cent, which is attributed to the healthy business conditions prevailing during the year.

AGRICULTURAL AND INDUSTRIAL.

The steady and healthy growth of the territory contiguous to this line is manifested by the agricultural activity prevailing generally. As timber is cut out, the fertile and productive land is being converted into farms, and farm products are taking the place of forest products. This activity has resulted in more and better schools, improved streets and sanitary conditions in the cities and towns, an improvement in drainage, the construction and improvement of county roads, and a general betterment in living conditions.

The peach crop of 1912 was the greatest in the history of that industry in East Texas; about 2,730 cars being handled by this line. Corn and cotton were above the average both in yield and quality. The damage to the cotton crop from boll weevil was, in most sections, very light, but the injury from the fall army worm was considerable in several localities, although the farmers are learning to employ poisons to combat this pest.

The cultivation of rice in Arkansas continues to receive unusual attention and there has been a steady increase in the acreage of this commodity since its original introduction in that State a few years back. The success of this industry is in many instances phenomenal, some of the yields during the past year averaging as high as one hundred bushels per acre. The cost of production is comparatively light and the margin of profit exceptionally large. The acreage devoted to rice in Arkansas during the past season was reported at 86,000 acres, and the estimate for the ensuing season is approximately 100,000 acres. Many rice planters are practicing crop rotation and devoting considerable of their rice lands to general farm crops.

The Agricultural and Industrial Department is giving special attention to educational work amongst farmers along the line. This work is being conducted in the form of personal visits to the farms, by holding farmers' meetings, publishing special bulletins and operating demonstration cars, all in co-operation with the United States Department of Agriculture and the local agricultural colleges and experimental stations. Methods of cultivation are gradually changing from the all-cotton and corn system to diversified crops. This is due to the various educational influences, as well as to the introduction of new people from the older farming sections of the country, who bring with them improved equipment and advanced ideas of cultivating the soil.

The industrial development has kept pace with the agricultural and general business development, and a number of new industries have been located along this line during the past year.

RATE LITIGATION.

The rate litigation with the State of Missouri, in which this company with seventeen other Missouri carriers, contested, on the grounds of confiscation, the validity of an Act of the Legislature passed February 27, 1907, fixing a maximum passenger fare within the State of two cents a mile, and an Act passed March 19, 1907, prescribing maximum intrastate rates on certain specified commodities in carload lots, was decided by the Supreme Court of the United States on June 16, 1913, adversely to the Company. The passenger and freight tariffs of the company have been revised to comply with the mandate of the Court and the two cent per mile passenger rate and the freight rates promulgated by the State Commission are now in effect.

Likewise the rate litigation with the State of Arkansas, in which this company and the St. Louis, Iron Mountain and Southern Railway Company, contested, on the grounds of confiscation, the validity of an Act of the Legislature passed on February 9, 1907, fixing the maximum passenger fare within the State at two cents per mile, and Standard Distance Tariff No. 3 promulgated by the Railroad Commission of Arkansas prescribing maximum intrastate freight rates for all classes of commodities, was, on June 16, 1913, decided adversely to the two companies by the Supreme Court of the United States. In conformity with the mandate of the Court the passenger and freight tariffs of the company have been revised and a two cent per mile passenger rate and the freight rates promulgated by the State Commission are now in effect.

It is difficult, at this time, to estimate to what extent the revenues of the company will be affected by the foregoing decisions but it is hoped good cotton and other crops, with the attending stimulus in business, will in a large measure offset the losses resulting from these rate reductions. Furthermore, it is believed that this company and other carriers similarly situated will at some future time be able to produce evidence sufficient to convince the State authorities of the inadequacy of the rates prescribed by them, which rates are in effect under protest of the carriers.

RAIL OPERATIONS—EXPENSES.

During the fiscal year ended June 30, 1913, the total expenses of operation show an increase of $796,382.02, or 9.46 per cent., as compared with the preceding year. The per cent. of expenses of operation to revenues from operation was 69.31 per cent. as against 69.92 per cent. for the preceding year, or a decrease of .61 of one per cent.

The general operating expense accounts show an increase over the preceding year as follows:

Maintenance of Way & Structures	$422,414.37	or 28.60%
Maintenance of Equipment	47,120.44	or 2.17%
Traffic Expenses	29,740.40	or 6.21%
Transportation Expenses	295,270.78	or 7.89%
General Expenses	1,836.03	or 0.33%

In Exhibit "B," on pages 26 and 27, will be found a comparison of operating expenses in detail, by primary, as well as by general accounts.

TRAIN AND CAR LOADING.

The following tables show the average load per freight train and per loaded freight car for the past ten years.

Average load, in tons, per loaded car (including company material).

Year ended June 30.	St. L. S-W. Ry. Co.	St. L. S-W. Ry. Co. of Tex.	Entire System.
1904	18.29	15.62	17.43
1905	18.19	15.54	17.43
1906	18.79	16.63	18.13
1907	19.01	17.06	18.40
1908	19.25	17.34	18.69
1909	17.84	16.67	17.49
1910	18.58	16.89	18.14
1911	18.78	17.30	18.32
1912	18.02	16.44	17.54
1913	18.36	16.44	17.78

Average load, in tons, per train (including company material).

Year ended June 30.	St. L. S-W. Ry. Co.	St. L. S-W. Ry. Co. of Tex.	Entire System.
1904	387.65	172.20	284.72
1905	385.02	177.33	295.50
1906	415.15	194.49	315.06
1907	425.92	202.81	323.35
1908	407.61	189.99	311.19
1909	394.23	190.34	301.61
1910	434.16	196.27	326.11
1911	423.70	200.04	320.16
1912	447.25	211.19	340.58
1913	461.11	214.50	349.49

EQUIPMENT.

The following equipment, contracted for during the preceding year, was received during the current year: 18 consolidated locomotives, 4 mogul switch engines, 10 steel baggage cars and 10 steel combination baggage and mail cars. This equipment was paid for from the proceeds of sale of First Terminal and Unifying Mortgage Bonds issued for that purpose.

During the fiscal year there was purchased for cash, and built at company shops, from current funds, equipment as follows: 2 official cars, 5 automobile cars, 22 cabooses, 29 box cars, 2 stock cars, 6 flat cars, 1 ballast car, 30 air dump cars, 2 wreckers, 1 lidgerwood unloader, 2 boarding cars, 1 dirt spreader, 1 steam wrecker, 3 wreck tool cars, 1 motor-gas car and 1 school-of-instruction car.

There was contracted for under trust agreement with the Philadelphia Trust, Safe Deposit & Insurance Co., executed June 1, 1913, 10 consolidation locomotives, 10 ten-wheel locomotives, 3 steel underframe dining cars, 2 steel underframe parlor cars and 200 general service steel underframe coal cars. Of this equipment, there was delivered and received up to June 30, 1913, the 3 steel underframe dining cars; the locomotives have been received since the close of the fiscal year; the 2 steel underframe parlor cars and the 200 general service steel underframe coal cars are to be delivered during October, 1913.

ADDITIONS AND BETTERMENTS.

Expenditures for Additions and Betterments—Road, during the current year amounted to $1,372,990.73 and for Equipment, after allowing for value of equipment retired, $716,134.75, making a total amount expended for additions and betterments during the year $2,089,125.48.

The work of double tracking certain portions of the line between Illmo, Mo., and Paragould, Ark., is under way, and, at the close of the fiscal year 7.4 miles of second track had been placed in service. Likewise the work of extending all passing tracks between these points is also in progress. These extended passing tracks will, in the future, be available as parts of the second main track. The line between Illmo and Rockview, a distance of 7.4 miles is used by the St. Louis, Iron Mountain & Southern Ry. Co. and the Chicago & Eastern Illinois R. R. Co., and between Rockview and Paragould, a distance of 102.9 miles by the St. Louis, Iron Mountain & Southern Ry. Co. under joint trackage agreements. These portions of the line accommodate a heavy traffic movement and the completion of this work, now under way, will greatly facilitate the operation of trains thereon.

The exhibit styled "Property Investment—Road and Equipment" on page 31, shows, in detail, the expenditures for additions and betterments during the current fiscal year.

NEW BRIDGE OVER THE MISSISSIPPI RIVER AT MEMPHIS, TENN.

The Arkansas & Memphis Railway, Bridge and Terminal Company has been organized for the purpose of constructing, maintaining and operating a double track railway and highway bridge over the Mississippi river at Memphis, Tenn. Under a contract between the Chicago, Rock Island and Pacific Railway Company, St. Louis, Iron Mountain and Southern Railway Company and this Company, dated May 14, 1913, the execution of which was authorized by the Board of Directors at a special meeting held on April 28, 1913, each of the three companies agrees to subscribe in equal proportions to the capital stock of the new Bridge Company. The construction, maintenance and operation of this bridge was authorized by Act of Congress July 20, 1912, amended August 23, 1912. Property for the approaches has been acquired, preliminary plans have been drawn, work has been commenced and the bridge will be pushed to completion as rapidly as possible.

FREIGHT HOUSE, TEAM TRACKS, ETC., AT ST. LOUIS, MO.

A new freight house and auxiliary facilities, at St. Louis, Mo., were completed and placed in service January 1, 1913. The completeness of these facilities and their accessibility to the shipping public has already resulted in a substantial traffic increase to and from the City of St. Louis.

NEW PASSENGER TERMINALS AT DALLAS, TEXAS.

Franchises have been obtained and property secured by the Union Terminal Company, Dallas, Texas, for the purpose of constructing a union passenger station and facilities therefor. The new terminal company has been organized by all lines entering the City of Dallas. The St. Louis Southwestern Ry. Co. of Texas owns a one-eighth proprietary interest in these new terminals and will make use of the facilities when completed in the operation of its passenger trains to and from Dallas.

FREIGHT TERMINALS AT FT. WORTH, TEXAS.

As stated in the preceding annual report, a desirable location in Ft. Worth, Texas, has been obtained on which to construct a freight house, team tracks, etc. Grading has been commenced and construction work is now under way on these terminals.